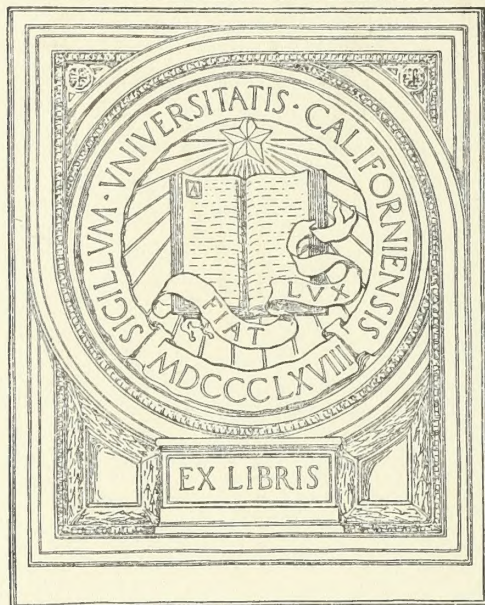


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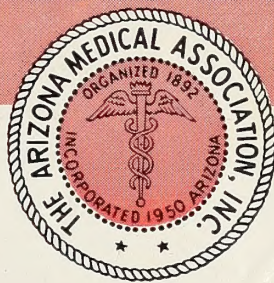
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Arizona Medicine

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ARIZONA MEDICINE

Journal of ARIZONA MEDICAL ASSOCIATION

VOL. 13, NO. 1



JANUARY, 1956

TABLE OF CONTENTS

OFFICERS

| | |
|--|----|
| ARIZONA MEDICAL ASSOCIATION, INC., DIRECTORY | 6A |
| WOMAN'S AUXILIARY DIRECTORY | 6A |

ORIGINAL ARTICLES

| | |
|--|---|
| THE TREATMENT OF CHRONIC AMEBIASES WITH CAMOFORM | 1 |
| Frank J. Milloy, M.D., Phoenix, Arizona | |
| THE DIAGNOSIS AND TREATMENT OF THYROID CANCER | 4 |
| Marcy L. Sussman, M.D., Phoenix, Arizona | |
| DANGERS OF DELAYING SPEECH THERAPY | 8 |
| Robert N. Plummer, Ph.D., Phoenix, Arizona | |

MEDICAL PROBLEMS

| | |
|--|---|
| PHOENIX CLINICAL CLUB | 9 |
| C. B. Warrenburg, M.D., Phoenix, Arizona | |

THE PRESIDENT'S PAGE

| | |
|---|----|
| AMERICAN MEDICAL EDUCATION FOUNDATION | 18 |
| Harry E. Thompson, M.D., President, Arizona Medical Association | |

EDITORIAL

| | |
|---|----|
| MEDICAL DOCTORS AND "FAITH HEALERS" | 19 |
|---|----|

TOPICS OF CURRENT MEDICAL INTEREST

| | |
|--|---------|
| RX., DX., AND DRS. | 22 |
| Guillermo Osler, M.D. | |
| YOUR PROFESSIONAL GROUP ACCIDENT & SICKNESS INSURANCE PLAN | 20 |
| MEETING NOTICES | 16 & 36 |
| REPORT OF THE DELEGATE | 26 |
| Jesse D. Hamer, M.D., Phoenix, Arizona | |
| ORGANIZATION PAGE — Civics | 34 |
| Norman Ross, M.D. | |
| ARIZONA PHARMACEUTICAL PAGE — The Pharmacist & Civil Defense | 37 |
| NOTES FROM THE EDITORS PEN | 38 |

WOMAN'S AUXILIARY

| | |
|--|----|
| HIGHLIGHTS OF THE 12th ANNUAL CONFERENCE | 39 |
|--|----|

DIRECTORY

| | |
|----------------------------|-----|
| LABORATORIES | 27A |
| DRUGGISTS DIRECTORY | 29A |
| SANATORIUM DIRECTORY | 32A |
| PHYSICIANS DIRECTORY | 35A |

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ARIZONA MEDICINE

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Original ARTICLES

THE TREATMENT OF CHRONIC AMEBIASES WITH CAMOFORM

Frank J. Milloy, M.D., F.A.C.P.
Phoenix, Arizona

THE following study is presented to evaluate the effectiveness of treating chronic amebiasis with Camoform®. Since the introduction of this drug, it has been administered to sixty-four patients who have had a diagnosis of this condition. Before beginning such a discussion it may be well to present some kind of concept of what might be termed "Chronic Amebiasis." To begin with it is a controversial subject and seems destined to continue as such, mainly because of the difficulty in confirming the diagnosis. This depends upon identifying the organism in the stools. And such an examination is unreliable, because it is only under certain ideal conditions that the organisms can be found in a routine stool examination. Time does not permit further elaboration on this point. Another reason is that there is so much misunderstanding about both the symptoms and the treatment.

When amebiasis is mentioned it is invariably associated with dysentery, and dysentery actually is a very rare occurrence in chronic amebiasis. To continue the misunderstanding, or what might better be termed illogical reasoning; Patients with amebiasis are often instructed not to eat lettuce. Lettuce seems to bear the brunt of the method by which ameba is contracted. If this were actually true, why wouldn't it be much more logical to warn all those who do not have ameba to avoid eating lettuce, so they

might not become infested with this parasite?

Since Craig began some thirty, or forty years ago to call attention to the prevalence of ameba in the intestinal tract many surveys have been conducted and they invariably confirm Craig's work. Very often these surveys confine themselves to the presence of *Endameba histolytica* only, and other forms of amebiasis are ignored. There probably is no harmless form of ameba. Of course the *histolytica* is the only form which goes beyond the mucous membrane of the intestines, and probably the only form which produces mortality. Never the less, the other forms are the cause of much morbidity, and many functional disturbances of the gastrointestinal tract. So it has to be a fact that many people harbor ameba in one form or another in their intestinal tract without many, if any symptoms, although every one who does harbor this parasite is a potential ameba patient at some time during their life. In fact amebiasis is found so frequently in symptomless people that it might be said that man and ameba live in symbiosis.

So admitting that the ameba is a common inhabitant of the intestinal tract of man, it might be well to speculate for a moment on the dissemination of this parasite. It is a well known fact biologically that ameba lives a very short time when it leaves the intestinal tract and loses the body temperature of its host. It is usually the encysted form which is transmitted. It is also known that the cyst is not resistant to

The Camoform used in this study was furnished by Park Davis Co., Detroit, Michigan.

The chemical name for Camoform is — Diallyl-diethylamino cresol dihydro-chloride.

extremes of heat or cold, and even drying out soon destroys it. Getting back to the subject of lettuce, why blame the head of lettuce that happens to be exposed to human excrement out in the lettuce field? It is the soiled hand which has just served the lettuce at the dinner table which transmits the parasite from one host to another, and the same thing applies to the bread and butter, and even the soup which often is not hot, and is served with thumbs. Magath expressed it when he said, "the human race has not reached that point where the intestinal contents of one does not find its way into the stomach of another."

SYMPTOMATOLOGY

The treatment of chronic amebiasis cannot be intelligently discussed without some reference or explanation of symptoms. The following positive statements offer strong suspicions of the presence of amebiasis. 1. Ameba is the commonest cause of alternating attacks of constipation and diarrhea. 2. Ameba is a very common cause of chronic constipation. 3. Ameba is a common cause of headache. 4. When gallstones and peptic ulcer are excluded, ameba is the commonest cause of digestive disturbances. 5. Ameba is a frequent inhabitant of the intestinal tract in the so called irritable bowel syndrome. 6. Ameba is a very common cause of flatulent dyspepsia. 7. Ameba is the cause of many bizarre gastro-intestinal symptoms which might be attributed to disturbances of the autonomic nervous system. Ameba is a common cause of a persistent leukopenia ranging between 4,500 to 6,000 leukocytes. 9. Ameba is probably the commonest cause of excessive mucus in the stools. However, whether it is the sole cause of so called mucus colitis where large amounts of mucus are eliminated from the bowels is equivocal, as this is one of the most intractable intestinal afflictions to alter with any form of treatment, including anti-amebic regimes. 10. There are a number of interesting observations in children, whose parents have amebiasis, especially if it is the mother who is afflicted. 11. The following triad of symptoms can frequently be observed in amebic patients; flatulent dyspepsia; bizarre, autonomic nervous system symptoms arising from the digestive tract; and mucous membrane irritation, not necessarily confined to the gastro-intestinal tract. 12. Many of these statements are certain to be controverted, but

are conclusions arrived at after prolonged clinical observations of many patients who have followed anti-amebic treatment.

TREATMENT

The treatment of chronic amebiasis is the control of symptoms and many of the symptoms are the result of functional disturbances. These functional disturbances have often been present for months and even years. For this reason a negative stool examination means very little in the relief of the average patients symptoms. Furthermore, pouring large amounts of anti-amebic drugs into these patients in short periods of time is more liable to aggravate these functional disturbances than to give any relief. As patients symptoms are relieved it is usually necessary to keep them on regimens which include small doses of anti-amebic drugs, either continuous or interrupted, for periods of weeks and months.

Since its introduction some three years ago, Camoform has been administered to sixty-four patients in whom a diagnosis of chronic amebiasis was made. Of these sixty-four patients thirty-six were new patients who had had no treatment previous, and twenty-eight were old patients who had had treatment with the older anti-amebic drugs. Of the thirty-six new patients, twenty-three responded satisfactorily to treatment. Six patients were unimproved and the Camoform was discontinued. In the other seven patients the treatment was stopped because it aggravated the existing abdominal symptoms. These were mostly patients of the irritable colon syndrome variety. In the twenty-eight old patients who had been on other forms of medication, five seemed to do better on Camoform than any of the older drugs. In twelve cases the response was about the same as on the previous regimens. Eleven cases were unimproved, and in some of these, especially the irritable colon variety, the old symptoms were aggravated.

In the entire group of sixty-four patients treated with Camoform there has not been a single case of dermatitis. No doubt this has been due to the low dosage. The average dose of Camoform received by these patients was .25 gm. once daily. Twenty of the new patients whose symptoms were quite acute and who were of the robust type, and without much irritability of the colon, were given .25 mg. twice a

day. Usually after a month of treatment it was reduced to .25 mg. once a day. This dosage has been continued by most of these patients, for interrupted periods, for one to two years. Three of them have taken .25 mg. once daily continuously for over a year without untoward bad affects.

In speaking of patients with acute symptoms it is probably impossible to determine whether the patient is suffering from acute amebiasis, or an acute exacerbation of the chronic disease. It is much more likely to be the latter.

Under the present sanitary conditions in our nation where water and milk supplies are so well regulated it is probably quite rare where any one is exposed to large numbers of ameba in a short period of time, as for example the Chicago epidemic in 1933. If we were actually in search of acute amebiasis we would probably have to look to children or young infants. Acute amebic dysentery has been reported in a two week old baby whose mother was found to have a positive stool examination.

Most patients suffering from chronic amebiasis should receive emetine hydrochlorid, and the average dose is one-half grain once a week given over periods of eight to twelve weeks, and repeated after intervals of four weeks or more. When dysentery occurs in chronic amebiasis, the oxyquinolines are more liable to give the most relief.

The judicious use of the anti-biotics in all cases of amebiasis along with the anti-ameba therapy (this statement is not intended to in-

clude those anti-biotics which are supposed to be specific for ameba) much enhances the possibility of satisfactory clinical results.

CONCLUSIONS

1. Chronic amebiasis is a controversial subject and will continue to be until its prevalence is more generally recognized.
2. If one depends on demonstrating the presence of ameba in routine stool examination in private office practice many cases of amebiasis will be missed.
3. There probably is no such thing as a harmless ameba, although many human beings may harbor their presence in the intestinal tract for years without apparent symptoms. But every one who does harbor them is a potential amebic patient at some time.
4. When ameba is suspected, and it is not demonstrated in the stools, a therapeutic test is indicated.
5. The only way to accurately determine the effects of anti-amebic drugs, in chronic amebiasis, is close clinical observance of the response to the control of symptoms.
6. After observing the response to treatment in these six-four patients over a period up to three years Camoform has demonstrated its therapeutic affect and takes its place among the other anti-amebic drugs at our disposal.
7. Camoform is especially advantageous in the treatment of chronic amebiasis as it can be given in small dosage over long periods of time without untoward symptoms.



THE DIAGNOSIS AND TREATMENT OF THYROID CANCER

Marcy L. Sussman, M.D.

Phoenix, Arizona

WHILE some aspects of the management of thyroid cancer are controversial, there are many areas of the subject in which there is complete agreement. It is generally conceded, for example, that the diagnosis of thyroid cancer can be established and excluded only by histological examination of the tissue. There is also no doubt that the definitive treatment of thyroid cancer is the surgical excision of all removable cancerous tissue. I shall not elaborate on these accepted principles. However, how radical the surgical procedure should be and the role of conventional radio-therapy are debatable. Furthermore, the value of the radioactive isotope, I-131 in the clinical management of suspected or proven cancer is of great interest. In about 15% of cases it plays an active role in treatment. I shall discuss, particularly, the use of these modalities.

INCIDENCE:

Thyroid cancers are not rare and form roughly 1% of all cancers. They may occur at any age. They are not uncommon in children but the usual occurrence is between 40 and 60 years of age. They occur more frequently in women. Some have thought that 90% arise from originally benign adenomas (1) but this is doubted by others (2) since an encapsulated nodule usually is either wholly benign or wholly malignant throughout.

PATHOLOGY:

The simplest classification is that of Foot (3) who distinguishes three groups, malignant adenoma, papillary adenocarcinoma and other carcinomas. However, these categories overlap. In non-goiterous regions, the papillary types prevail; in goiterous areas, the non-papillary types.

Malignant adenomas are of low or potential malignancy and formerly comprised the largest group of thyroid cancers but their incidence is decreasing. The benign tumors are classified into simple adenomas and cyst-adenoma. They are considered malignant when there is evidence of blood vessel invasion or invasion of the capsule. The adenomas which are of the

fetal or embryonal type are more likely to show blood vessel invasion but the evaluation of this finding is sometimes difficult even for an experienced pathologist. A characteristic of the tumor is vascularity of the stroma. The close proximity of the malignant cells to the vessels, which often are sinusoids, predisposes to early invasion. At the same time, as has been emphasized by Portmann (4), errors are often made when based on histology alone. The term "benign metastasizing thyroid" originated in this way and refers to a well-differentiated benign-looking tumor with metastases already present.

At least 60% of the cancers are papillary adenocarcinomas. It is a relatively avascular type and is likely to be encapsulated. Blood stream invasion is not common and spread usually occurs by the lymphatics. Local recurrence after operation is common. Many tumors have been thought to arise from lateral aberrant thyroids but it is more generally agreed that these are metastatic implants rather than primary tumors. (5) The tumors found in young people are most often of this type.

Other carcinomas of the thyroid form the smallest group. Ordinarily, they bear no evident relation to previous thyroid disease. They occur in older patients, invade locally and show no striking tendency to spread by the blood stream. In general, these tumors are much like cancer elsewhere and show no particular reference to the thyroid as a functioning gland, although some alveolar carcinomas take up iodine. (6)

METASTATIC SPREAD:

The spread of the adenoma and cystadenoma by blood vessel invasion and of papillary adenocarcinoma through regional metastases may be very slow. It is not unusual for these tumors to recur after several years or for metastases to remain apparently docile in nodes, bones or lungs for five years. A recent case which I observed was subjected to thyroidectomy in 1922. Pulmonary metastases did not appear until 1946. Death occurred in 1951, but from an unrelated cerebral hemorrhage. Unilateral tu-

mors usually are associated with unilateral node involvement. The nodes along the larynx, trachea and external jugular vein are commonly invaded.

There is a striking tendency for thyroid tumors to metastasize to bone. They usually appear in the spongy portions of the bone, are richly vascularized and may pulsate. Lung metastases are apt to be multiple and often are subpleural (5).

FUNCTION IN RELATION TO HISTOLOGIC STRUCTURE:

From the point of view of the present discussion our interest in the histologic structure is in relation to sensitivity to radiation and iodine uptake. It has long been known that contrary to experience with most tumors of other origin, thyroid cancers which are well differentiated and apparently functioning are most likely to be radiosensitive. Rawson and Starr (7) from their studies concluded that **cell height** is a good index of thyroid activity. Increase in cell height denoted cellular hypertrophy, and hypertrophy was an accompaniment of hypersecretion. Bobyns, Skanse and Maloof (8) emphasize that **relative uniformity in cell height** is a characteristic of normal and non-neoplastic hyperplasia. Increasing variability in cell height marks the transition to neoplastic tissue but secreting neoplastic tissue cells vary less in height than those of non-secreting type.

Rawson and Trumbell (9) prepared a classification of benign and malignant tumors relating histologic structure to function, but the groupings are not rigid. In general, cancer is less apt to take up iodine than normal thyroid tissue. There seems to be a correlation between the presence of follicles and the ability to concentrate iodine. Nevertheless, Beierwaltes (6) reports that of 32 cancerous thyroids that responded "favorably" to treatment with I-131, sixteen had follicular, ten alveolar and six had papillary carcinoma. Evidently the final practical test of the possible efficacy of I-131 is uptake and distribution, not histology.

I-131 UPTAKE IN RELATION TO THYROID CANCER

It has long been recognized that thyroid cancer is not often found in association with clinical hyperthyroidism; a few malignant adenomas are the exception. Furthermore, while

cancer may develop in a toxic adenoma, this is unusual (8). In an occasional case, a malignant nodule has been found in the midst of a hyperplastic gland removed for hyperthyroidism and occasionally, a nodule on one side is functioning, another on the other side is non-functioning and malignant.

I-131 technics have demonstrated that cancer generally takes up less iodine than other thyroid tissue. If then a nodule is found that takes up iodine briskly—this is usually called a "hot" nodule—the chances are that it is not malignant but it must be re-emphasized that the presence or absence of mild toxicity should not *per se* establish the definitive diagnosis. On the other hand, a single "cold" nodule should arouse a considerable suspicion of malignancy. It is found that 18% of all single thyroid nodules are cancerous (8) which is a much higher incidence of malignancy than occurs in multiple nodular goiter. Nodules are not always sharply "hot" or "cold" and those that are "lukewarm" present difficult problems in evaluation. However, the study is recommended not primarily with the thought of diagnosis but to determine management and since I-131 uptake studies put no strain on the patient, and single nodules are relatively easy to scan directionally, there is no reason for withholding the tests. Certainly a functioning nodule that continues to be "hot" even though it increases in size, will be of less concern than a "cold" nodule under similar circumstances.

The work of Corrigan and Hayden (10) suggests that the presence of cancer introduces a qualitative change in iodine metabolism with a prolonged high activity in the liver. They noted a diminishing activity in the tumor tissue compared to a maintained level in the normal tissue. In our limited experience this has not been confirmed.

It has seemed to us that I-131 studies are an essential procedure in the pre-operative study of all patients who are to be subjected to thyroid surgery. The proper treatment of a known cancer undoubtedly requires knowledge of its function. However, many thyroid cancers are unsuspected, and the diagnosis is made only when the pathologist studies the specimen. Therefore, not only all patients with cancer and toxic goiter but all goiters except possibly the multiple nodular variety should receive a pre-operative determination of the

I-131 uptake. In addition, it is desirable to make radioautographs of the excised tissue.

THE TREATMENT OF THYROID CANCER:

The definitive treatment of thyroid cancer, whether or not there are metastases, regional or distant, is removal of all cancer tissue. Whether the surgery needs to go beyond excision of the recognized tumorous tissue is debatable and is beyond the scope of the present discussion. However, in my opinion radiation, both pre- and post-operative, if carried out intelligently and skillfully, can widen the scope of surgery and improves its results.

According to Cade (11) the rationale of **pre-operative radiation** depends on:

- 1) The danger of blood stream spread during surgery because of the intimate relation of tumor cells to blood vessels particularly in the malignant adenoma.
- 2) The survival of radiated cells that are spread is not as likely.
- 3) The dosage to achieve this effect is moderate (2000-3000 r). It results in little damage to normal tissues and does not delay operation unduly.

However, the therapist is seldom given the opportunity to apply this treatment and further discussion is not warranted at this time. Therefore our main interest is in post-operative radiation which is advocated not as a prophylactic procedure but as an integral part of the management of the patient. In Cade's opinion, it is mandatory (1) where the operation is difficult due to the extent of the growth (2) where extracapsular extension is present (3) where cervical nodes are involved and (4) in the presence of non-removable recurrence. Hare and Salzman (2) present statistical evidence to support the thesis that all but fetal adenoma should receive routine post operative therapy. Many thyroid cancers are responsive to x-ray therapy and this can be determined in the individual case only by trial. On the other hand patients will survive with surgery alone. My own feeling is that radiation should be given on an individual basis depending on the presumed adequacy of the surgical removal. I am convinced that radiation can control some residual tumors. A dose of 4800 r to the tumor bed in 21 days is recommended by some while others use smaller doses of the order of 3600 r. Implantation of

radon seeds may be desirable in certain situations, particularly in recurrences.

Contrary to some surgical opinions, Rawson and Trunnell (9) contend that all normal thyroid tissue should be removed as part of the primary surgery of thyroid cancer. If a partial thyroidectomy has been performed either electively because the tumor seemed circumscribed, or because the cancer was unsuspected and found only after histological examination, many feel that the remainder of the normal thyroid should be removed at a second operation or medically by the therapeutic use of I-131. The rationale for this attitude is that if metastases are present or appear in the future, definitive treatment, if it is to depend upon I-131 uptake, will require the elimination of normal thyroid tissue. Thyroidectomy as an integral part of the first approach makes the systemic and repeated search for functioning local recurrence or metastases a much simpler task. There is considerable merit in this approach and it should be used more often than is customary. The problem is in which case to use it and this is a matter of clinical judgment. The fact that because of the thyroidectomy, the patient will require thyroid medication for the rest of his or her life does not seem radical as against the early diagnosis of recurrence or spread. Only functioning metastases can hope to be controlled with I-131 and even conventional radiotherapy is more likely to be effective under these circumstances. One does not refer to "cure" because even in apparently favorable cases an uneven distribution of the isotope may be insurmountable.

When metastases already are present total removal of all thyroid tissue either surgically or by I-131 is essential. It is hoped that this will put a demand for hormone on otherwise non-functioning cancer cells. It is known that in some cases these cells may begin to function although this may not occur for two months, or even as Rawson has reported in some cases, two years. Since the metastases are often not rapidly progressive, there is justification for continued effort over a long period of time. Thyrotropic stimulating hormone (TSH) may stimulate the iodine-concentrating capacity of certain thyroid cancers. TSH (Armour) given in doses of 30 mg per day for four to eight days has been reportedly effective in some cases. However, more commonly, thiouracil in large doses has been used. Rawson (9) recommends

that two months and perhaps sooner after surgery, 1-2 grams per day is given for weeks or months. At the end of each month, and about 96 hours after discontinuing the drug, a tracer of I-131 is given. Precisely when treatment may be worthwhile is difficult to establish and depends on clinical judgment. One rule is when the 24 hr. urinary I-131 is less than 25% of the oral dose and provided the blood I-131 is less than 1% per liter of whole blood, 48 hours after the test dose. Another is when the uptake exceeds 10%. It may be desirable to follow thiouracil with a course of TSH or give the two drugs simultaneously. Thiouracil probably acts through augmenting the effect of TSH in localizing the isotope in cancerous tissue. A recent alternative suggestion is to suppress endogenous TSH hormone production by giving large doses of thyroid hormone (13).

The actual dosage of I-131 to be used also is largely empiric. Total cumulative doses between 100 and 1000 mc have been used. Ordinarily between 50-100 mc are given in a single dose depending on the uptake and the estimated size of the tumor. I-131 delivers about 158 rep per microcurie per gram of tissue assuming homogeneous distribution. If allowances are made for spotty distribution and biologic half life, one might aim at about 48,000 r or 300 uc/gram of tissue. However, in practice, the estimate of amount of tumor tissue often is quite erroneous and only empiric doses are useful. In general, only one metastasis at a time collects damaging amounts. After its regression, another deposit assumes the role of a "major collector." The toxic effects of large doses of I-131 are not ordinarily serious if blood I-131 levels are watched but may include (1) hyperthyroidism due to rapid breakdown of thyroid tissue and the release of thyroglobulin (2) amenorrhea (3) depression of blood elements with a diminution in the number of lymphocytes which is followed by a depression in the number of platelets.

SUMMARY:

- 1) The diagnosis of thyroid cancer is established only by histological examination of tissue by an experienced pathologist.
- 2) The definitive treatment of thyroid cancer with or without distant metastases is the surgical removal of all cancerous tissue. There is merit in the recommendation that all normal

thyroid tissue should be removed in many cases either at the primary surgery or subsequently by the therapeutic use of I-131. Certainly all cases to be treated with I-131 should be so treated.

3) In a general way, the histological appearance of the cancer can be correlated with functioning capacity. In general the more differentiated the cells and the more uniform the cell heights, the more likely the tumor is to function. However, in the individual case, no tumor should be assumed to take up I-131 or the possibility excluded by the histology alone.

4) Radiation therapy should be an integral part of the planned attack on thyroid cancers and is advised at least in cases where complete surgical removal is not possible. Post-operative conventional radiotherapy to the tumor bed is recommended in all cases of thyroid cancer depending on the presumed completeness of the surgical excision.

5) Known cancers should be studied pre-operatively with respect to I-131 uptake, and radioautographs should be made of excised tissue. Because cancer is often found unexpectedly, much can be said for performing these tests prior to removal of all nodular goiters except possibly a non-toxic multiple nodular goiter.

6) The treatment of functioning metastases is by large doses of I-131. Various methods may be used to improve the uptake when it is otherwise too low. While cure will probably not take place, prolonged satisfactory life may be the reward for painstaking effort. The treatment of non-functioning metastases may not be rewarding but conventional radiotherapy is always worth a trial.

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DANGERS OF DELAYING SPEECH THERAPY

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THE general delay in seeking treatment of speech disorders is disturbing to the speech pathologist. Exclusive of adults, those coming to the writer's office for speech therapy during the last fifteen years have averaged seven years, plus.

An individual learns more from birth to age six than during any other six year period. High impressionability and a naturally avid curiosity during this period enable him to sap up a vast quantity of learning—including speech. It is the natural thing for the individual to have developed near-normal speech, without assistance, by age five. And it is easier for the speech defective to achieve normal speech, with assistance, during this natural speech development period of under six.

This is not only true because of natural learning ability, but further true because defective speech habits become progressively more deeply rooted from age five on. And by the same token, they become progressively more difficult to correct. A case in point concerns two brothers, one four and the other six. The four-year-old was near alalic and the six-year-old severely dyslalic. Response of the younger child to speech therapy was amazingly faster than that of the older. Almost without exception, the speech sounds commonly defective in the two brothers were more quickly corrected in the four-year-old, and it was a relatively short time before the younger child achieved more intelligible speech than the older one.

Further demonstrating the wisdom of early treatment of speech disorders is the fact that a great majority of stutterers six years and under can be corrected in six months, while those over six require eight to ten months. And severe dyslalias, in which speech is quantitatively normal but qualitatively unintelligible, usually can be corrected in twelve months if therapy is begun in four- to five-year-olds, but they require a minimum of eighteen months if therapy is delayed beyond age six.

An added reason for early treatment of disordered speech is the danger of psychological

trauma. Abnormal speech presents a glaring deviation from normalcy. And a speech disorder reaches its peak of seriousness when the child conceives the idea that he is an abnormal individual. The time of such a conception varies with the individual, but three-year-olds have been known to be so embarrassed by a speech inadequacy that they refused to talk at all. At the other age extreme, a seventeen-year-old shed tears following an examination and discussion of his speech failure—and his mother shed tears over what she termed her neglect for assuming over the years that her son would outgrow the disorder.

If the child is fortunate enough not to recognize his defective speech as a handicap during the preschool period, he usually is quick to recognize it as such upon entering school. Children strange to him are quick to point out his deficiency since they are brutally frank in pointing out abnormal deviations in others, and their fun-poking, mimicry and slighting remarks spotlight the speech defective as abnormal, queer, "crazy." And thus is sown the seed for personality trauma which will persist long after disordered speech has been eliminated.

Since speech disorders are more easily corrected at an earlier age than when treatment is usually sought, and since allowing them to go untreated is a hazard to personality, the question arises, why do parents delay in seeking treatment? The answer is that nearly every parent believes his child will "outgrow" the speech failure. This attitude constitutes the greatest problem the speech defective faces in securing relief from his handicap. Not only does such a trust exist among parents, but this trust is strengthened by advice from friends, neighbors, relatives and other associates. Typical is the case of a child whose mother brought her for speech examination and who, subsequently, was started on a therapeutic program. After several treatments, however, it was reported that the father had decided against further treatment. He had been convinced by "the men at the shop" that the child would outgrow the difficulty.

*Speech Pathologist.

Editors note: This is the first of a series of articles by Dr. Plummer dealing with speech disorders. Others will follow in future issues of Arizona Medicine.

While it is true that some do outgrow defective speech, the assumption that all children will do so is proven false every day in the speech pathologist's office. Here one sees individuals nineteen years and down whose speech is barely intelligible. One sees stutterers ranging from adults downward, and he sees accompanying parents with abnormal speech characteristics which obviously were not outgrown. Some-time ago a mother brought her five-year-old for speech examination, but decided to give the child another chance to make spontaneous recovery. Two years later the child was returned for re-examination which revealed almost identical severity of speech deficiency as noted in the first examination. Another child, a stutterer aged seven, was brought for examination, and in this case too it was decided to delay treatment. This child was brought back nine years later—now a high school student—with a more severe and deeply rooted stutter than when originally examined.

More specific information concerning the number of children who do not outgrow speech failures is to be found in statistical records. Extensive testing by the writer in twenty Phoenix

elementary schools and in the Training School at Arizona State College, Tempe, revealed that 22 percent of all first graders in these schools had defective speech. It was also revealed that 18 percent of all eighth graders were defective; which is a relatively small decline over this period of eight years. And the decline from eighth grade on will be still smaller, since the older the individual the less the possibility of spontaneous recovery from defective speech.

What is the solution to the problem posed by a general apathy toward speech handicaps? The answer appears to be education. The parents, the schools and every agency which contacts the speech defective must be alerted to the urgency of early treatment of speech disorders. The solution is not to play a waiting, wishful game to see which children will, and which ones will not, make a spontaneous recovery. Just as we immunize 100 per cent against all diseases in which it is possible to do so, so is it sensible to treat all speech disorders persisting beyond age five—or the age at which near-normal speech reasonably can be expected—in order to safeguard those who will not recover without assistance.

PHOENIX *Clinical* CLUB

The Case History in this discussion is selected from the Case Records of the Massachusetts General Hospital, and reprinted from the New England Journal of Medicine. The discussant under Differential Diagnosis is a member of the staff of the Massachusetts General Hospital. The other discussants are members of the Phoenix Clinical Club.

MASSACHUSETTS GENERAL
HOSPITAL
PRESENTATION OF CASE 38452

A TWENTY - THREE - YEAR - OLD para III, gravida III, was admitted to the hospital because of right lower abdominal pain.

About nineteen months prior to entry the patient experienced for the first time a sharp, stabbing pain in the right lower quadrant that lasted twelve hours and was relieved by codeine. Since that time bouts of similar pain had occurred approximately every two or three months. On the morning of admission she noted the sudden onset of pain in the right lower quadrant

described as a constant, deep ache with radiation into the right flank and down the right leg, which was not relieved by 3 codeine tablets. She vomited twice.

The patient had felt well until the beginning of the pain. She had had three full-term normal deliveries five, three and one-half, and two and one-half years before entry. Since the birth of her first child she had had a whitish vaginal discharge, which she thought had increased somewhat recently. She denied venereal infection. The menarche had occurred at thirteen years of age, and menses had occurred every twenty-eight to thirty days, lasting five days with a normal flow. Her last menstrual period ended seven days before admission to the hospital. There were no bowel or urinary-tract symptoms. She had been married six years but was separated from her husband from time to time because of his excessive drinking.

Physical examination showed a well developed woman in no acute distress. The heart and lungs were normal. Both lower quadrants were

tender, the right much more so than the left. There was slight rebound tenderness and no real spasm except on deep palpation. Peristalsis was normal, and there was a positive psoas sign on the right. On pelvic examination there was considerable whitish mucoid discharge in the vagina. There was exquisite tenderness on motion of the cervix, mainly on the right. The uterus was enlarged to about twice the normal size and was firm. There was severe tenderness in the right vault, and a firm, tender, rounded mass measuring 3 to 4 cm. in diameter. The left vault was slightly tender but free of masses. Rectal examination disclosed nothing further.

The temperature was 100°F., the pulse 95, and respirations 24. The blood pressure was 120 systolic, 70 diastolic.

The urine gave an X test for sugar; the sediment contained occasional white cells and red cells. Examination of the blood revealed a hemoglobin of 11 gm., and a white-cell count of 12,000, with 90 per cent neutrophils.

On the second hospital day examination revealed marked tenderness and spasm in the right lower quadrant but very little tenderness and spasm in the right lower quadrant but very little tenderness on motion of the cervix or in the right vault. During the next three days the pain varied in severity, and at times the patient felt anorexic but did not vomit. The right-sided mass continued to be tender but did not increase in size. The temperature and white-cell count remained slightly elevated despite the administration of 600,000 units of penicillin started on the third hospital day.

On the fifth hospital day an operation was performed.

Dr. Clarence B. Warrenburg

The diagnosis of the twenty-three year old female who was admitted to the hospital because of right lower abdominal pain, is twisted right ovarian cyst.

In the differential diagnosis of this interesting gynecological patient, chronic pelvic inflammatory disease must be ruled out, as well as ectopic pregnancy, and probably tuberculous salpingitis. The question of appendicitis is always present when there is right lower quadrant pain and tenderness, and in today's case it must be considered. In chronic pelvic inflammatory disease, almost invariably a history of an initial acute attack of pelvic inflammation can be obtained. As a rule the symptoms de-

velop gradually, although at any time the clinical course of chronic pelvic inflammatory disease may be punctuated by acute exacerbations. The pain in chronic PID is usually described as a bearing down or aching discomfort in the lower abdomen and pelvic regions, however, sometimes it is described as sharp and severe. Rather characteristically the pain is exaggerated just before or during menstruation. In the early stages, the patient may complain of only discomfort, especially on exertion or prolonged standing. Later the pain is constant and severe. Backache is often a troublesome symptom, as is rectal discomfort or pressure explained by the fact that the diseased adnexa impinge upon the rectum to which they are not infrequently adherent. Dysmenorrhea is the most common of the menstrual symptoms and it may be so severe as to necessitate bed rest at each menstrual period. Menorrhagia is not uncommon though rarely excessive. Leukorrhea is almost always noted. Sterility is a prominent feature in PID.

More important than the history in chronic PID, is the physical examination and especially the bimanual palpation of the pelvic organs. This reveals in the typical case, an irregular, tender and rather fixed mass in both sides of the pelvis and sometimes filling the cul de sac. The uterus may be in normal position, but it is often retroverted, and often much less movable than normal. Efforts to move it about by manipulation of the cervix or fundus, usually causes much pain, and drawing the cervix forward will make the patient complain of pain, which not infrequently is referred to the rectum.

In ectopic pregnancy, there is likely to be a slight delay in menstruation, followed by persistent slight bleeding of a spotting character. In pelvic inflammatory disease and in twisted ovarian cyst, the menstrual rhythm is often not disturbed. With ectopic pregnancy, the pain is likely to be colicky, severe and one-sided, and frequently there is nausea and faintness. The latter is lacking in PID, but can be present in twisted ovarian cyst. Pelvic examination in cases of tubal pregnancy, show a unilateral tender mass with no tenderness in the opposite side, exactly as our case is described today. However, it is noted in this protocol, that there is no disturbance whatsoever of the menstrual rhythm. In PID, the condition is almost always bilateral.

A pyosalpinx may be mistaken for an adherent ovarian cyst or vice versa, and a similar difficulty may arise in differentiating a large hydrosalpinx from a small ovarian cyst. Usually, however, ovarian cysts are readily distinguishable by their rounded, smooth, elastic feel, and their free movability.

Pelvic endometriosis is another condition which may be difficult to distinguish from chronic pelvic inflammatory disease, and endometriosis of the ovary may be indistinguishable from ovarian cyst, or twisted ovarian cyst. In endometriosis, as in PID, there is a history of pelvic pain and increasing dysmenorrhea, dyspareunia, and involuntary sterility. In either, the pelvic examination reveal the adnexa to be enlarged, adherent to the posterior surface of a retro-placed uterus. The presence of one or more nodules in the utero-sacral ligaments, is always highly suggestive of endometriosis.

The symptoms of tuberculous salpingitis are much like chronic gonorrheal salpingitis, and the preoperative diagnosis usually cannot be made. However, there are certain features which will lead one to suspect the nature of the lesion. The known existence of pulmonary or urinary tract tuberculosis, especially in advanced form, might give a clue in some cases, the demonstration of the tubercular bacillus in the discharge. The fact remains that in most cases, tuberculous salpingitis is not suspected before operation and that many of the patients are otherwise in good general health.

Torsion or twisting of the pedicle of an ovarian cyst and the acute symptoms thus precipitated are not infrequently the first indication of the presence of an ovarian tumor. This complication is more common with tumors of small or moderate size than with the very large ones. A number of factors may be concerned in the production of torsion, most important being the weight of the tumor, or trauma in the form of sudden jolts, and the peristaltic movement of the intestines.

Twisting of the pedicle is generally in a clockwise fashion, and it may be slight, or so extreme that several complete twists of the pedicle are demonstrable. The circulatory disturbance produced by the torsion usually affects the veins chiefly, with intense venous stasis so that the cyst becomes dark bluish or even black in color. In extreme cases, the arteries are also occluded with gangrene of the cyst

as a result. The cyst may even, if the condition is not recognized or neglected, twist itself off completely and cases are recorded in which rather large cysts have thus been severed from their attachment and undergone complete absorption.

The occurrence of torsion of the pedicle is associated with pain which may be sharp and persistent, but which in other cases may be only moderately severe and transitory. The latter is true when the twisting of the pedicle corrects itself as it not infrequently does. A history common in cases of ovarian cysts of moderate size, is that from time to time the patient has experienced attacks of sharp pain with spontaneous disappearance after a short while. Such attacks are quite certainly due to moderate and transitory twisting of the pedicle.

In a considerable proportion of cases, however, the symptoms produced by torsion of the pedicle are much more urgent. Sudden excruciating pain is experienced, usually referred quite definitely to one side or the other of the lower abdomen. When the cyst is on the right side, the simulation of acute appendicitis may be made all the more perfect by the occurrence of nausea and vomiting and the development of tense rigidity over the right lower abdomen. The pulse is accelerated and the temperature elevated though it rarely rises more than perhaps 101. Examination of the blood shows a moderate leukocytosis. It is not surprising, therefore, that many patients with this condition are operated upon for the mistaken diagnosis of acute appendicitis.

Our patient today, fits so easily into the diagnosis of twisted right ovarian cyst that I wonder if we might not be in error. I still remember an early clinical club case that was given to me with the final diagnosis of normal uterus. I feel fairly sure that our patient does not have chronic pelvic inflammatory disease because in that condition, the pelvis is more fixed and more likely to be bilateral. The diagnosis of ectopic pregnancy does not gel because there is no menstrual irregularity whatsoever. The fact that the uterus described as twice its normal size, may very well be due to her multiparity. The exquisite tenderness in the right adnexa on manipulation of the cervix, which is so characteristic of ectopic pregnancy, can also be present with twisted ovarian cyst in precisely the same degree of tenderness. Endometriosis is also ruled

out because there is very little fixation of this pelvis. Patients with endometriosis of any degree are frequently sterile. This patient is anything but sterile. Her fertility also help rule out chronic pelvic inflammatory disease and tuberculosis of the tubes.

Appendicitis is ruled out because these recurrent attacks during the 19 month history of this condition would not be relieved in 12 hours if the diagnosis were recurrent appendicitis. Then the firm, tender, rounded mass, measuring 3-4 cm. in diameter in the right adnexa, is not characteristic of acute appendicitis. Our final diagnosis then, is the same as our original tentative diagnosis, namely, twisted ovarian cyst, right. It is not possible to diagnose the type of cyst preoperatively.

DIFFERENTIAL DIAGNOSIS

Dr. Howard Ulfelder: This young married woman of known fertility and good health came into the hospital with an acute illness of less than a day's duration. The illness was characterized by sudden, right-lower-quadrant, constant, unremitting, aching, deep pain, which was followed by vomiting. Whether the codeine taken to relieve the pain was responsible for the vomiting I do not know; nausea was not mentioned. This pain apparently radiated to the right flank and down the right leg, and examination in the hospital disclosed tenderness in the right lower quadrant. Spasm may or may not have been present; it was not an outstanding feature of the examination. The intestinal tract showed normal peristalsis. She had a positive psoas sign, which I assume to mean that when she was asked to try to flex her hip against a certain amount of resistance she had pain in the right lower quadrant. Other findings at the time of admission are the enlarged uterus, described as twice the normal size, with marked tenderness to the right of the uterus in the vault, and a space-filling, tender object 3 or 4 cm. in diameter. She had slight fever and moderate elevation in the white-cell count, with a definite increase in the percentage of neutrophils. She had some cells in the urinary sediment, both red and white, but not in great amount. The hemoglobin was a little lower than one would expect in a healthy young woman but not enough so to suggest an acute massive hemorrhage as the cause of admission.

The differential diagnosis in a situation of this sort, I should think, include infection, inter-

ference with blood supply to some organ in this area, hemorrhage into an organ and obstruction to some smooth-muscle viscus. The localizing findings in this patient point to the right iliac fossa and the true pelvis. The radiation of the pain to the flank and down the leg, the positive psoas sign and the tenderness on abdominal pressure point to the right iliac fossa; however, the tender mass was in the true pelvis, which is not the right iliac fossa—although they are adjacent.

There are structures in the right iliac fossa—the right ureter and the cecum—that can be examined by the roentgenologist. I suspect that there were no abdominal or pelvic x-ray films, but I hope there were either pyelograms or a barium-enema examination.

Dr. Benjamin Castleman: No x-ray films at all were taken.

Dr. Ulfelder: In that case I cannot exclude a lesion in that area on the basis of the x-ray findings as I had hoped.

Other leads that I must explore include the history of previous attacks of pain in the same location that lasted approximately twelve hours—apparently she had at least four (enough to be significant), occurring without known provocation and so far as I can tell subsiding spontaneously. The history makes pregnancy unlikely. She had a normal menstrual history, she was known to have been fertile previously, and she had a period that was not described as having been abnormal in any way and ended seven days before admission. I assume that this pain started about midcycle for this patient. Whether this means that ovulation played any part in this picture I am not yet prepared to say. Endometriosis I should consider unlikely on the basis of the history. She did not have the characteristic dysmenorrhea, and she had three pregnancies, all within the previous five years.

Her course in the hospital is the next aid in arriving at a diagnosis. I assume, from the description that the diagnosis at the time of admission was deferred, that she was not considered to be desperately ill and that a program of supportive therapy was therefore instituted in the hope that a definite diagnosis could be arrived at under observation. One assumes from the history that on the supportive therapy she neither grew worse nor improved. One important feature of this early period of obser-

vation is confirmation of the finding of the mass in the pelvis. I am sure that when she first came in she was much too tender for any examiner to be absolutely certain that a mass was present. Over the course of the next few days the tenderness became somewhat less pronounced, and the presence of the mass was confirmed. One gathers that chemotherapy made little difference, and, therefore, after a short period during which it was hoped that chemotherapy would bring about some dramatic improvement, the surgeons decided to operate on her.

Whether at the time of exploration a more definite diagnosis had been made, I cannot tell from the record. No studies made while the patient was in the hospital under observation are of any particular help to me. There are some significant omissions from the protocol if they are really omissions. In the first place, a fasting blood sugar was not reported. That means to me that the physicians were not particularly impressed with the finding in the urine. Again, a Gram stain on the secretion from the vagina and cervix was not reported. The question of an acute pyosalpingitis of gonococcal origin would have prompted most physicians to make that Gram stain although it is not particularly significant unless it is positive. Thirdly, an Aschheim-Zondek test was not reported. The persistent presence of a mass in the right vault and the notation that the uterus was twice the normal size at the time of admission, regardless of the menstrual history should have prompted an Aschheim-Zondek test. The lack of x-ray films I consider a significant omission also.

Dr. Castleman: A culture of the vaginal discharge showed abundant growth of *Staphylococcus aureus* and was negative for *gonococcus*. An Aschheim-Zondek test was negative.

Dr. Ulfelder: What is the differential diagnosis in this patient? First of all, she could have had an acute suppurative salpingitis, so-called pelvic inflammatory disease, which would explain the picture about as well as any other single lesion. However, an acute appendicitis with abscess, the appendix lying over the brim and partly in the true pelvis, could also explain it. A third possibility is an acute accident to the right ovary or to a cystic right ovary. This acute accident could have been thrombosis or hemorrhage into the cyst. Somewhat less likely

conditions—because they do not explain all the findings—include a lesion of the right ureter, particularly a calculus, which could have caused a good many of the symptoms but would not explain the pelvic findings, or a lesion of the small bowel. This history is not unusual in patients with intussusception that does not completely obstruct. A Meckel diverticulum or some other lesion of the small bowel that produced intussusception could cause abdominal pain in the period before a small-bowel obstruction developed. There may be quite a long interval from the time intussusception begins in the small bowel to the complete occlusion of the involved loop.

My problem is whether to try to make on lesion explain the entire picture or whether to assume that the mass felt in the right vault was more or less an incidental finding but so adjacent to be the chief difficulty. Needless to say, I have not arrived at a diagnosis in my own mind. I had hoped that the x-ray films would exclude some of the possibilities for me, although I did not expect that they would actually make the diagnosis.

I have excluded endometriosis and tubal pregnancy by history. I have excluded a ureteral calculus, which would not explain the mass. I have not excluded an acute appendicitis although the history of onset and the course in the hospital are not consistent, but if there is one thing that is consistent about acute appendicitis it is its inconsistency as far as its behavior is concerned. I do not believe it was torsion of a right ovary, for then I should expect the mass to have become more tender and to have increased in size during the period of observation in the hospital. I am left, therefore, with the possibility of an acute appendicitis with abscess, which I shall put lowest on my list, the possibility of some lesion of the small bowel and finally, what I consider the most likely diagnosis, an acute suppurative salpingitis—that is, pelvic inflammatory disease.

Dr. Walter Bauer: What do you think of hemorrhage into the cyst?

Dr. Ulfelder: I should expect that such a mass would get larger and more tender during the time of observation. Patients with such vascular accidents usually have a much higher white-cell count and less fever at the time of onset.

Dr. John T. Quinby: Do you think the diag-

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nosis of acute salpingitis is consistent with the history of episodes of right-lower-quadrant pain in the past?

Dr. Ulfelder: I think pelvic inflammatory disease, diverticulum, a cyst of the right ovary that twisted and untwisted or almost any of the diagnoses that I have raised could have have not let it influence me one way or the other.

Dr. Castleman: Under anesthesia, the surgeon examined the patient before operation and felt a large cyst, which lay in the midline, was movable and measured about 12 by 10 cm., and higher in the right vault another harder mass, which measured about 5 cm. in diameter. Do you wish to comment about that?

Dr. Ulfelder: That the patient was under anesthesia does not make the examination more accurate than the initial examination. The examiner may be badly fooled even when the patient is well relaxed. It does not help me to make a more accurate diagnosis from the list of my differential diagnoses. I assume that the larger cystic mass was what was previously called the two-times-enlarged uterus and the other was the tender mass found during the patient's preoperative course.

CLINICAL DIAGNOSIS

Right tubal abscess.

Twisted cyst with tubal abscess.

Twisted ovarian cyst (after ether examination).

DR. ULFELDER'S DIAGNOSIS

Acute suppurative salpingitis.

ANATOMICAL DIAGNOSIS

Paraovarian cyst, with twisted pedicle

Infarcted right ovary.

PATHOLOGICAL DISCUSSION

Dr. Castleman: At operation, the large midline mass proved to be a hemorrhagic paraovarian cyst, which had twisted about 360° counter-clockwise and had also twisted the right ovary along with it. The small hard mass was the infarcted right ovary secondary to the twist of the large paraovarian cyst. The tube itself had some hemorrhage into it, but there was no evidence of previous infection. The whole mass was removed en bloc, I suppose there had been some twisting and untwisting over the past nineteen months.

A PHYSICIAN: How large was the paraovarian cyst?

Dr. Castleman: Twelve by 8 by 8 cm; it was good sized, which is not at all uncommon. Often, a large noninfarcted paraovarian cyst is removed with a preoperative diagnosis of ovarian cyst, and a normal ovary is found beside it.

TREAT YOURSELF TO A WEEK OR TWO IN HAWAII IN THE SPRINGTIME, WHY DON'T YOU?

That's an invitation it's a pleasure to pass along. It comes from the Hawaii Medical Association, whose members are celebrating their organization's Hundredth Anniversary this coming April 22 to 29 in proper "Hawaii" as well as medical fashion. There will be a short but worth-while professional program on Monday and Tuesday mornings, a spectacular Centennial Celebration Pageant Tuesday night, and a traditional *luau* (Hawaiian feast to you Easterners) Tuesday night, with Polynesian entertainment.

This is the best time of the year to visit America's island paradise — clear, balmy days and cool, refreshing nights; spring flowers in profusion on the ground and in the trees; lovely island m— but you have the idea now, surely. Hawaii in the spring is always the greatest, and this is your chance to tie it into a professional meeting. It follows the American College of Physicians' session in Los Angeles, too. Write the Hawaii Medical Association, 510 South Beretania St., Honolulu 13, Hawaii, for reservations application forms.

CALIFORNIA MEDICAL ASSOCIATION

Committee on Postgraduate Activities
The 1956 Regional
Medical and Surgical Institute

Institute for Southern Counties Region — Laguna Beach — January 19-20

Institute for North Coast Counties Region — Santa Rosa — April 5-6

Institute for West Coast Counties Region — Carmel — March 1-2

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Institute for Sacramento Valley Counties Region — Cal-Neva, Lake Tahoe in June

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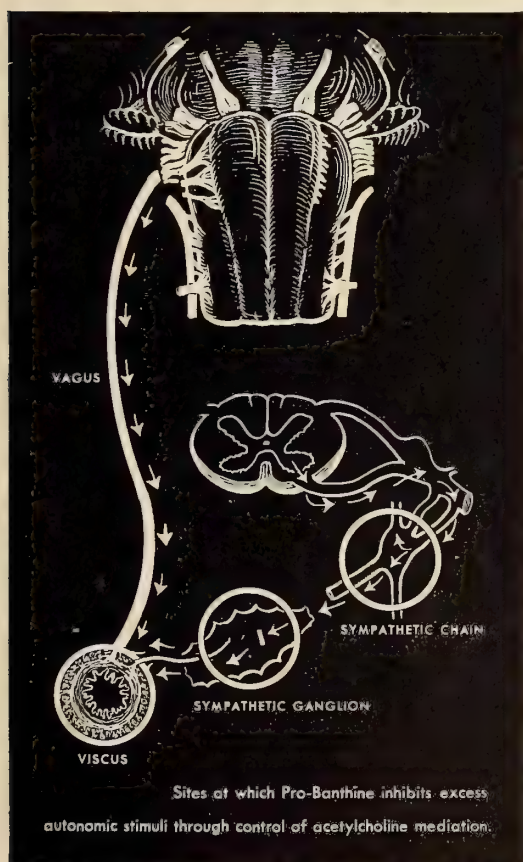
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1. Schwartz I. R.; Lehman, E.; Ostrove, R., and Seibel, J. M.: *Gastroenterology* 25:416 (Nov.) 1953.

2. Roback, R. A., and Beal, J. M.: *Gastroenterology* 25:24 (Sept.) 1953.

Clinical trial packages of Pro-Banthine and the new booklet, "Case Histories of Anticholinergic Action," are available on request to . . .

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THE *President's* PAGE

AMERICAN MEDICAL EDUCATION FOUNDATION & HOUSE BILL 7225

THIS page will be devoted to two important items. The first, the AMEF of which everyone is familiar, has received very little contribution from the State of Arizona. You may remember in the 1954 House of Delegates, an assessment was made to cover our contribution to the AMEF and the Western Pact for Higher Education, but in 1955, the House of Delegates took no action on their committee recommendations. In other words, Arizona has fallen from a very high place in contributors to an amount that is practically nil. It is advisable that if you have made contributions to your school, or plan to make them, that they should be made to the AMEF and earmarked for your school. There are no deductions for handling and the total amount will go to your Alma Mater. Let me stress this again, that any contributions that you may make, should go through the AMEF tabbed for your school of your choice. Your Council at its meeting in November allocated \$5.00 per member from the general fund to be utilized for the purposes of the AMEF and the Western Pact bringing our contribution of the State for its doctors, to approximately \$3,500.00. This is Arizona's way of participating in a program to prevent government intervention into our medical school system.

The next item of very great importance, is House Bill 7225. You have heard of this frequently in my letters, in the AMA Journal and through our AMA President, Dr. Elmer Hess. His letter which will reach every member brings an important message and some of his points are as follows:

1. "This measure (House Bill 7225) would be a significant step toward converting Old Age and Survivors benefit system into a medical care program. It is the most subtle . . . and hence the most dangerous . . . approach yet devised."
2. "It was rushed through the House and will be considered by the Senate when it reconvenes in January and after hearings are scheduled by the Senate Finance Committee."
3. "The passage of this bill would carry with it dangerous implications for physicians and eventually tax burdens so heavy that our national economy might be threatened."
4. "AMA hopes to join with many other groups and individuals in a nationwide program of thoughtful Americans who believe in promoting sound economic security."

Dr. Hess has asked the physicians for constructive suggestions, and adds: "I want your participation as physician, as friend, as supporter. You can help by writing to your Senators, distributing the enclosed message to your friends and by making copies of it available in your reception room."

Both of these items, The American Medical Education Foundation and House Bill 7225 deserve the attention of all members of our association.

Harry E. Thompson, M.D.
President, Arizona
Medical Association

Editorial

ARIZONA MEDICINE
Journal of
ARIZONA MEDICAL ASSOCIATION, INC.
VOL. 13 JANUARY, 1956 NO. 1

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The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
5. Submit manuscript typewritten and double-spaced.
6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.

The Editor is always ready, willing, and happy to help in any way possible.

MEDICAL DOCTORS AND "FAITH HEALERS"

PRACTICALLY every physician at some time or other has recited to him the case of some one or other who has been miraculously healed by some "faith healer" who is making his appearance in the community. This is often someone who has "been given up by the doctors" or someone who has been treated by many doctors for many years and "they have not seemed to be able to find what the trouble was." The story of the "miraculous healing" is often flung at the physician with the implied challenge to explain it if you can and often times there seems to be the implication that physicians have too high opinion of themselves and are really quite impotent in their capacity for caring for the

sick and sometimes there is the further implication that the physician is defrauding the public in pretending to be able to do so.

This is not to deny the occurrence of miracles nor is it to deny that physicians are infallible. Most physicians in our acquaintance would be quick to admit the existence and performance of miracles in the healings which they see occurring day by day in the marvelous working of the laws of nature and the powers of nature set into being and motion by the Omnipotent Supreme Being whom we worship. Miraculous cures, then, are nothing new to the average physician. It is his contention that they are no less miraculous by having occurred through the working of these God given natural laws than if they were done through the Apostolic gift of miraculous healing which "faith healers" claim to have. Also, most physicians of our acquaintance would be the first to admit their own weaknesses and fallibility and share the spirit of Ambrose Pare the French surgeon who is reputed to have said that he dressed the wounds but the Lord healed them.

Apropos of this subject our attention has been called to an article which appeared in the September 19th issue of the Presbyterian Outlook entitled "What About the Faith Healers?". The author of this article quotes freely from a small booklet prepared by Carroll R. Stegall, Jr., pastor of the Pryor Street Presbyterian Church in Atlanta, Georgia. Judging from the quotations from the booklet, Rev. Stegall is a little more than dubious concerning the sincerity of some of these so-called "faith healers" and of the genuineness of their publicized results, while at the same time he apparently does believe in the power of prayer in opening the way to healing. One quotation from this little booklet, we feel, will be of particular interest to our readers in Arizona and particularly in the Phoenix area.

"Healers go to any length to procure (testimonies). They will quote medical sources, true or false. In his March, 1952, issue of Healing Waters, Oral Roberts printed a cover picture which showed three men, the caption reading "Three Great Medical Doctors Congratulate Oral Roberts for His Ministry of Faith to Suffering

Humanity During the Roberts Campaign in Phoenix." The names of the doctors are given, and another photograph in the magazine shows Dr. J. H. Miller, outstanding medical doctor, president of a medical society of over 20,000 physicians . . .

"Dr. Donald Grey Barnhouse, the nationally known pastor of the Tenth Presbyterian Church in Philadelphia . . . took the time to do a little research into these 'doctors.' An inquiry to the American Medical Association brought the answer from their Bureau of Investigation that not one of the men mentioned in the captions could be identified as doctors of medicine or licensed to practice medicine in Arizona. One of the three men was tracked down through a telephone directory in Phoenix, and was found to be operating as a 'naturopathic physician' . . . No organization headed by Dr. Miller was discovered, and the 'North Towne Clinic' supposedly operated by one of the men was non-existent. Yet this 'man of God' has the temerity to claim support from 'Three Great Medical Doctors.'"

This naturally leads to a very important point, that is, that organized medicine of Arizona and elsewhere for that matter should study carefully any project for which their endorsement is requested and further should be ever on the alert for implied endorsements of any project or activity and be quick to inform the public if these endorsements are not true.

YOUR PROFESSIONAL GROUP ACCIDENT AND SICKNESS INSURANCE PLAN A PROGRESS REPORT

DID you ever hear the expression "Good as Money in the Bank?" That is precisely what your Arizona Medical Association group insurance program has proved to be.

Total payments of the National Casualty Company if translated to the experience of ONE DOCTOR would provide disability income for 15½ years . . . with reserve equal to 5½ additional years.

\$60,000 in benefits have been paid to members of your Association since July 15, 1953. Present monthly benefit payments range between \$2,000 and \$3,000.

Yes, we say again, your group disability in-

surance program is money in the bank just when needed the most by members of the Association. We have received many letters expressing the complete satisfaction of members in the manner disability claims are handled by the National Casualty Company. Since all claim drafts are filed in the Association office, we are in a position to report that benefits are distributed promptly, regularly and quietly to members in all parts of the State of Arizona.

Although the payment of claims is high, I am told it is in keeping with the predictable loss ratio for a contract which is as liberal as ours. The plan will approach peak efficiency as the number of members who participate increases.

During the past six months, 62 members have added this coverage to permanent insurance program. Information and details may always be obtained by communicating with this office. Not only are new members accepting the insurance during their sixty-day non-medical enrollment period, but many other doctors have obtained this coverage by submitting Evidence of Insurability.

Just a word on the Extended Disability contracts. The cooperation of the membership resulted in enrollment of 84% of the eligible membership, more than the 75% required by the underwriter. This guaranteed the success of the offering and ALL applicants received policies. Through this program we have obtained coverage for certain members who have serious medical histories and have assurance that all new members will be accepted for both Basic and Extended coverage.

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TOPICS OF *Current Medical* INTEREST

RX., DX., AND DRS.

By Guillermo Osler, M. D.

DOES MACY'S tell Gimble's? Does one drug producer tell another? The Hyland Laboratories of New York gives full credit to Pfizer's for summarizing the data on **Agammaglobulinemia**, and for the suggestion that "parental administration of gamma globulin once monthly has provided excellent protection" . . . The big-hearted attitude probably stems from the fact that Pfizer does not produce G.G., but Hyland does ('Poliomyellitis Globulin—Human').

A search has been going on for some years to find a name for **THE PHYSICIAN IN GENERAL PRACTICE**. He has been called a 'general practitioner,' which is too cumbersome; a 'G.P.,' which can be confused with a laboratory animal; an internist,' which is too confining; etc. . . . A recent cover of the *Journal of the Michigan State Medical Society* (which is too long a name in itself) has used a title which may call the turn on a better name — the '**GENERALIST**.'

The 'Generalists,' as represented by their journal 'G P' (of the American Academy of General Practice), have attacked a hospital routine which has seemed so usual that we all presume it is fixed and invulnerable. Maybe so, but they editorialize that the '**shutdown of hospitals on weekends** has serious medical and economic disadvantages. Week-end lulls discourage admissions, hold up service, and can be a hazard to patients.

An unknown author has produced the following quotation — "**Nothing in life or disease is statis. This makes living and the practice of medicine worthwhile.**"

Another saying, probably not new even in Hippocrates' time, says "News is never as good or as bad as it first appears."

An old topic in this column has been **ANTI-RABIES TREATMENT**. We have speculated on the value of the old stuff, and the certainty that new material would be devised . . . A report from the W.H.O. in Switzerland describes "the highly successful results" from combining the traditional **VACCINE** with hyperimmune antirabies **SERUM**. This combination of vaccine and serum is particularly useful for bites on the head and face, in which a serious progress occurred before the old vaccine could become effective.

The national total of **suicides** is probably 50,000 per year. The **prevention** of suicide depends largely on the recognition of the pre-suicidal states . . . Half of those who attempt suicide have psychoneurotic depression, a few have organic diseases, and the remainder are psychotic. About 70% of the depressions are in manic depressives, and the others are either involuntional or schizophrenic . . . Symptoms which have no organic basis should be evaluated. Insomnia is an early symptom of depression, and the patient may pace the floor or smoke at night. Anorexia may be present, and cause loss of weight and constipation. Lack of usual interests, loss of libido, and concern over potency are all signposts . . . One should not send depressed patients on a vacation, or give them a supply of barbiturates (since 20% of suicides are due to the latter) . . . Saving the patient may be of wider usefulness, since one out of six attempt to kill others before trying self-destruction.

The pendulum has swung away from a complete absence of **MASTOIDECTOMY** on the surgical list to its use in a few per cent of the acute 'ears' . . . The reasons seem to be, according to Davison of Geisinger Hospital (Pa.), that myringotomy has not been performed, or that penicillin has not been used enough or at all . . . Adequate dosage, incidentally, is said to be 3 million units per day for children under the age of six, and double that amount for those over six.

A recent publication in the *Journal of Urology* describes the use of 'Clorpactin 90' as a new topical germicide in **tuberculosis cystitis**. It not only kills M. tuberculosis, it is said, but is effective against proteus and aeruginosa . . . There are two odd things about this announcement — no previous publication about it has occurred in TB journals, but this report is co-authored by John Lattimer who is 'Mr. GU TB.' We'll have to hear more.

There has been considerable confusion about the terms used to describe the substances from, or affecting the **ADRENAL CORTEX**. At the risk of compounding this disorder we jot down a few descriptions . . . The cortical stimulating drug is **ACTH**, or adrenal corticotropic hormone. The general term to describe the substitution materials is **adrenal cortical steroids**, or (more briefly)

A Short Course In EVOLUTION

Chapter 1

Some years ago doctors were not always paid in cash. Sometimes it was a tub of butter, a cord of wood, a jug of fresh-pressed cider, or a homemade cake. Sometimes it was nothing but a "thank you doctor".

Chapter 2

Then doctors began to bill for services rendered. This billing was usually done at harvest time when patients had the available ready-cash to settle up.

Chapter 3

Later doctors, to satisfy the patients' "just bill me for it doctor", sent out monthly bills. Regular systems were set up to handle this special patient service.

Chapter 4

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corticosteroids, or steroids. The analogs of cortisone (which has been the major steroid) are metacortandracin (called prednisone) and metacortandralone (called prednisolone) . . . The trade names will have to be figured out from this list, but you can guess the derivations of 'Acthar,' 'Cortone,' and 'Meticorten.'

A California state hospital has allowed its sex offenders to publish a booklet dealing with their problem. A therapy 'team' is used to rehabilitate them, and consists of a psychiatrist, a psychologist, a psychiatric social worker, and a rehabilitation therapist . . . They like the idea that treatment of their problem should be "medical rather than punitive." Nine out of ten offenders are at large, they say, and the offender does not know of his abnormality until the first commission of a crime . . . An enlightened attitude is logical, but can only work if a 'team' is available, and if the judge can be persuaded to take the right 'therapeutic' view of a sordid crime.

AN IMMUNOLOGIC PHENOMENON described by Drs. Peterson and Campbell of the Ag and Medical schools in Minneapolis has considerable medical promise. They have vaccinated cows against various diseases and proved that humans who drink the milk will show antibodies . . . The immunity is 'passive' and temporary, and continues only as long as the milk is ingested . . . Medical practice is doing quite a few things for the farmer, including buttermilk, skim milk, protein milk, sodium-free milk, et al. Now we may be able to use it for immunizing.

Our friend C. D. Leake (who 'lives' in this column, along with W. Alvarez, P. Samson, F. Meleney, et al) has just written an article in 'Postgraduate Medicine' on "Drug Allergies" . . . He subdivides the manifestations of drug reaction into those localized in special organs or tissues (hives, diarrhea, hay fever, agranulocytosis); those with generalized acute symptoms (such as anaphylactic shock); and generalized mild reaction (fever) . . . Any chemical having a carboxyl, hydroxyl, or amino group can combine with various amino acids to form a complex capable of cellular sensitization. The list of such drugs runs the gamut from salicylates thru barbiturates and halogens to antibiotics . . . His suggestion for the best management includes prompt withdrawal of the drug, administration of corticosteroids, and the use of such a cellular stabilizing agent as ascorbic acid. Easier said than done, of course.

The recent Eisenhower episode has caused the public (and the medical profession) to enquire about the TREATMENT OF AN ISCHEMIC MYOCARDIUM . . . We have heard that Mr. Eisenhower was given a narcotic, plus papaverine, plus

an anticoagulant. We probably will hear more than these few items about his case . . . A positive but possibly drastic approach to coronary artery disease is **CARDIO-PERICARDIOPEXY**. This method was first used by Thompson and associates in 1939, and in the past ten years has been given a fairly good trial. Several series of 45 to 55 cases have been treated by the instillation of talc (2 to 4 drams of sterile magnesium silicate) thru a small anterior incision. The results include about a 10 per cent mortality, a partial success in half of the remainder, and a good result (in health and ability to work) in the other 40 per cent. It is a daring thing to try, but the alternative is bleak.



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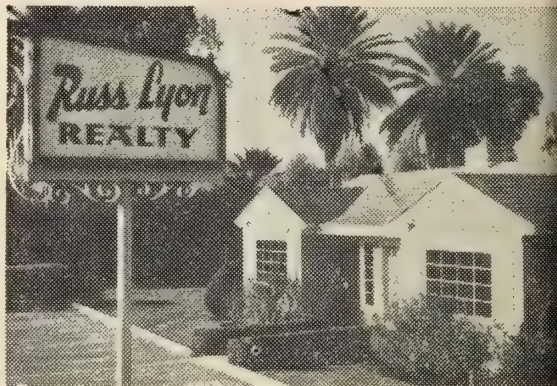
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*Schaefer, F. H.: Ohio State M. J. 51: 347 (April) 1955.

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DEPORT OF DELEGATE

Boston Clinical Session, House of Delegates Meeting,
American Medical Association
Jesse D. Hamer, M.D., Delegate

YOUR Executive Secretary, Mr. Robert Carpenter, and your Delegate attended all the meetings of the A.M.A. House of Delegates, held Nov. 29 thru Dec. 2, in Boston.

This Report on Actions of the House of Delegates cannot be covered in detail in this report because of the great length required. It is hoped that a brief summary of some of the more important actions, however, will be of interest to the members of our State Association.

During the Clinical Session annually, the President of the A.M.A., the Board of Trustees, Secretary, Treasurer, all the Standing Councils and Committees present their annual reports. These are all printed in a handbook for each Delegate for his information, and use of the various Reference Committees to whom all reports are submitted for comment and recommendation to the House. Many of these will be published in the Journal of the A.M.A. in current issues, and furnish the reader with several hours of interesting material covering the whole sphere of A.M.A. activities.

Blue Shield Prepayment Health Insurance

One resolution dealt with "Medically Sponsored Voluntary Prepaid Medical Care Plans," and the two "resolves" said:

"Resolved, That this House of Delegates commends physicians and the medical society sponsored plan in which they participate for the important services being rendered in health care for the American people; and be it further

"Resolved, That the A.M.A. reaffirm its approval of medical society sponsored non-profit prepaid medical care plans as a means for financing medical care."

The reference committee adopted this resolution which was introduced by Delegates from Connecticut and Massachusetts.

The other resolution, introduced by a Delegate from Ohio, dealt with the subject "Blue Shield Prepayment Health Insurance."

After commending the accomplishments of the Blue Shield Association of Medical Care Plans, the House resolved "That this House of Delegates commend professional sponsored non-profit insurance to the American public."

Social Security

All members of the American Medical Association

have, by this time, received a personal letter from the President of the A.M.A., and an analysis of the Social Security Amendments contain in a bill H.R. 7225 passed by the House of Representatives last July. It is hoped that this communication will have the effect of stimulating you, your colleagues, auxiliary members and all patriotic Americans, at all community levels, to take militant action against this legislative proposal. The Senate Finance Committee (Senator Harry F. Byrd, Chairman) will hold hearing on this bill shortly after Congress convenes in January. The A.M.A. as well as many other organizations, will present testimony in opposition to the measure at the hearings. However, this is not enough. If American Medicine is to halt the steady march to Socialism and defeat H.R. 7225, it is going to require the writing of thousands of letters and wires to our Senators and to Senator Byrd. Local educational campaigns on the implications of HR-7225 should be conducted and every legitimate medium employed to focus wide public attention on HR-7225. The following actions were taken on this bill at the meeting in Boston.

Major legislative policy action taken at the Boston meeting involved H.R. 7225, known as the Social Security Amendments of 1955. This bill, which was passed last summer by the U.S. House of Representatives and is now pending before the Senate Finance Committee, includes a proposal for federal cash benefits to selected individuals judged to be permanently and totally disabled. The House of Delegates adopted a substitute resolution proposed by the Reference Committee on Legislation and Public Relations to combine the intent of four resolutions and three supplementary reports of the Board of Trustees dealing with H.R. 7225 and other aspects of Social Security. The substitute resolution stated the following policy:

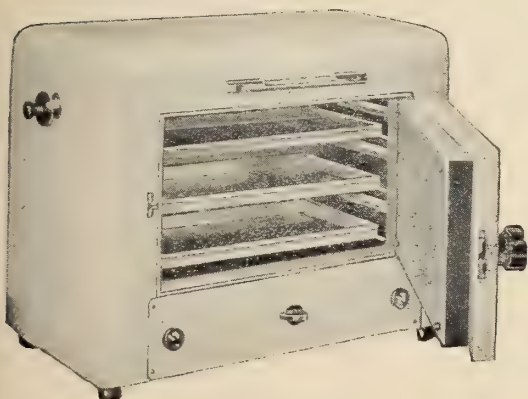
"That the American Medical Association reiterate in the strongest possible terms its determination to resist any encroachment upon the American system of medical practice which would be detrimental to our patients, the American people;

"That the American Medical Association urge and support the creation of a well-qualified com-

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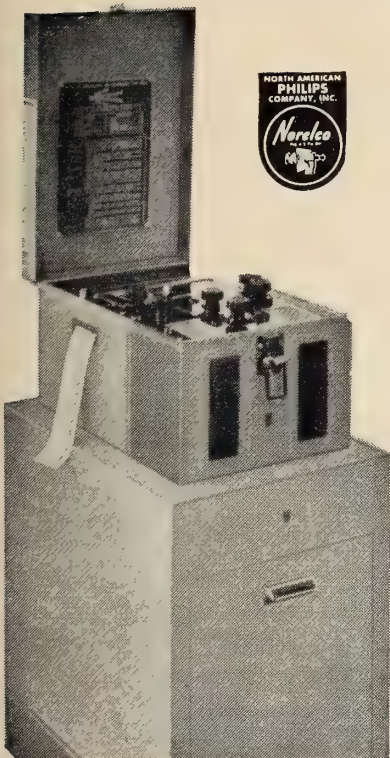
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mission, either governmental or private or both, to make a thorough, objective and impartial study of the economic, social and political impact of Social Security, both medical and otherwise, and that the facts developed by such a study should be the sole basis for objective non-political improvements to the Social Security Act, for the benefit of all of the American people;

"That the American Medical Association pledges its wholehearted cooperation in such a study of Social Security in the United States, and will devote its best efforts to procuring and providing full information on the medical aspects of disability, rehabilitation and medical care of the disabled, and

"That copies of this resolution be transmitted to the President of the United States, to all members of the Cabinet, to all members of the Congress, and to all constituent state medical associations."

OASI Coverage of Physicians

In another action on social security, the House Passed the following resolution designed to determine the exact attitude of physicians toward compulsory or voluntary coverage under the social security system:

"Whereas, Misunderstanding exists about the position of the medical profession on the question of the inclusion of physicians in the Old Age and Survivors Insurance provisions of the Social Security Act; therefore be it

"Resolved, That the House of Delegates of the American Medical Association recommend to state societies that they poll their entire membership on this question and that the results of the poll be transmitted to the Board of Trustees of the American Medical Association as soon as possible." Our State Association conducted such poll of its membership in 1954, with approximately 60% replying.

Report on Medical Practices

The House passed a substitute resolution offered by the Reference Committee on Insurance and Medical Service to implement the findings and recommendations of the Committee on Medical Practices (Truman Committee), which studied the basic causes leading to certain unethical practices and unfavorable publicity. The resolution, adopted with the proviso that it is subject to review by legal counsel, includes the following points:

"That a Continuing Committee on Medical

Practice be created in the American Medical Association to conduct a study of the relative value of diagnostic, medical and surgical services and to report its findings and recommendations to this House in the same manner as is now followed by other committees and councils of the Association;

"That this committee shall consist of five members of the House appointed by the Speaker, three of whom shall be general practitioners;

"That this committee be directed to utilize all possible means to stimulate the formation of a department of general practice in each medical school;

"That the American Medical Association approve of the medical school teaching programs which afford the medical student opportunity for experience in the general practice of medicine;

"That the representatives of the American Medical Association on the Joint Commission on Accreditation of Hospitals be instructed to stimulate action by that body leading to the warning, provisional accreditation or removal of accreditation of community or general hospitals which exclude or arbitrarily restrict hospital privileges for generalists as a class regardless of their individual professional competence, after appeal to the Commission by the County Medical Society concerned;

"That this committee cooperate in every way and assist the Public Relations Department of the American Medical Association to present a program of public education designed to bring about a better understanding of all fields of medical practice, and

"That this committee use its full influence to discourage any arbitrary restrictions by hospitals against general practitioners as group or as individuals."

In a complementary action on the same subject, the House also approved a supplementary report of the Board of Trustees which included the following suggestions:

1. All non-surgical groups should be asked for their suggestions and cooperation in carrying out a public education program on the value of diagnostic and medical work.

2. The various specialty boards should be encouraged to reappraise the practice restrictions on their board diplomates.

3. The American Medical Association should continue to discourage arbitrary restrictions by

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hospitals against general practitioners.

4. Organized medicine is "ready, willing and able to solve satisfactorily its own problems, and such assurance should be given to the American Hospital Association or any other group concerning itself with such problems."

Guides for Grievance Committees

The House approved the report of the Committee to Recommend Guides for Grievance or Mediation Committees and commended the committee for "their superb approach to this problem." Purpose of the guides is "to promote general uniformity of organization and function of grievance committees — and better understanding of their purposes — without interfering with the inherent autonomy of constituent medical associations. Constituent associations are therefore urged to implement these guides without delay."

The Reference Committee on Miscellaneous Business made the following recommendations which were adopted by the House:

"Your reference committee desires to support the recommendation that a brochure be published promptly which will outline the recommendations regarding the activities of Grievance Committees and that this brochure be given wide distribution.

"We recommend also that there be an appendix to this brochure in which additional, practical suggestions shall be included.

"We desire also to support the contention that there should be no equivocation concerning the naming of such committees and we recommend that a uniform policy be adopted in which they are called frankly 'Grievance Committees.'

"Finally, your reference committee recommends that because of the many variables, including the laws of the several states, which may influence the operations or procedures followed by State Grievance Committee, legal counsel shall be sought at the local level within the states."

Medical Ethics

A proposed revision of the "Principles of Medical Ethics and Precepts of Manners of the American Medical Association" was submitted to the House by the Council on Constitution and Bylaws. The following reference committee suggestion was adopted by the House:

"In discussion it became evident that there was need for wide distribution of these principles and careful study of the proposed changes

not only by this Reference Committee but also by all members of the House and in fact all members of the Association. It seemed desirable also that the two Councils (Council on Constitution and Bylaws and the Judicial Council) should meet in joint session to consider these proposals. Your Reference Committee therefore recommends that these proposals be tabled for further consideration at the next annual session of the House to be held in Chicago in June, 1956.

"In the meantime, it is recommended that these proposals in their entirety be widely publicized and that consideration be given to publishing, in the Journal of the American Medical Association and also in state medical journals, these proposed changes in the Principles. It is also recommended that consideration be given to the mailing of copies to each member of the Association. Finally, your Reference Committee recommends that prior to the meeting in Chicago next June the Council on Constitution and Bylaws and the Judicial Council meet in joint session to consider these proposed changes."

In another action on revisions of medical ethics, the House also approved a plan requiring that all resolutions dealing with changes in the Principles of Medical Ethics shall be considered over a period between sessions of the House before final adoption.

Miscellaneous Actions

Among many other actions on a variety of other subjects, the House of Delegates also:

Recommended that the Board of Trustees give consideration to a dues increase for all Association members, with the increase designated for contribution to the American Medical Education Foundation;

Adopted a resolution on the practice of pathology declaring opposition to "the division of any branch of medical practice into so-called technical and professional services";

Recommended that further purchase and distribution of Salk polio vaccine be carried on by the presently available commercial avenues used for other immunizing agents, and that all vaccines, once proven, should enter the usual channels of distribution;

Approved appointment of an A.M.A. committee to study the prevention of highway accidents;

Commended the Women's Auxiliary of the A.M.A. for its financial contributions in sup-

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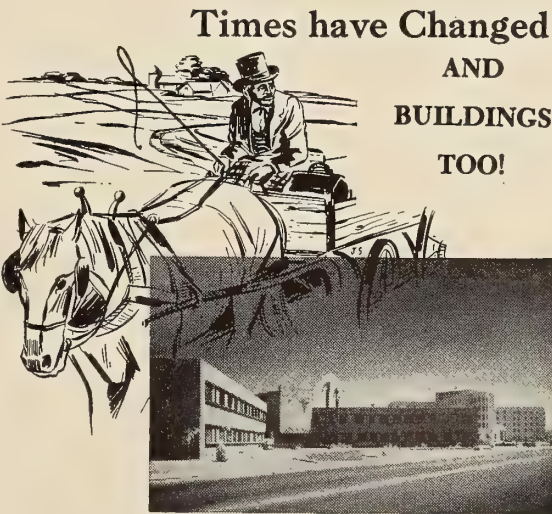
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port of medical education and requested the Auxiliary to continue its active efforts;

Commended the Sears Roebuck Foundation for its thoughtfulness and foresight in sponsoring the new plan for financial assistance in establishing medical practice units;

Received progress reports from the Commission on Medical Care Plans and from the A.M.A. Law Department on its studies of professional liability;

Approved a Board of Trustees recommendation that the State Journal Advertising Bureau be separated from the American Medical Association and be given full autonomy;

Congratulated the physicians of Iowa for their efforts in supporting the position that the practice of medicine is the right of the individual, and

Approved the selection of Minneapolis for the 1958 Clinical Meeting and Chicago for the 1960 Annual Meeting.

Opening Session

Dr. Elmer Hess, A.M.A. President, told the opening session of the House that complacency should be regarded as the medical profession's greatest enemy. Although good progress is being made in informing the public and the profession of the objectives of organized medicine, he said, educational efforts must be intensified and the list of physicians' tangible accomplishments for the health benefit of the public must be increased.

Dr. Leo H. Bartemeier, Chairman of the A.M.A. Council on Mental Health, told the House that the new Joint Commission on Mental Illness and Health will be ready to embark on its nation-wide study and re-evaluation of the human and economic problems of mental illness after the first of the year. Dr. Bartemeier, who is Chairman of the Board of Trustees of the Commission, appeared before the House to explain the functions of the new commission, which was organized to carry out the Mental Health Study Act passed by Congress earlier this year, without a dissenting vote in either house.

Addendum:

Your Delegate attended the regional meeting sponsored by the A.M.A. in Omaha, Nebr. on October 15, for the purpose of discussing physicians' attitude toward a number of legislative bills which are pending, or will be introduced

into Congress during this session, and again in Chicago, October 21, a meeting called by the Board of Trustees of the A.M.A. for the purpose of considering a feasible program which will help defeat H.R. 7225, the Social Security Amendments of 1955. This meeting was attended by representatives of all but two of the constituent State Associations, and the broad policies of approach to this question were worked out, with the help and counsel of the Department of Public Relations and the Public Relation firm of Borzell and Jacobs. These policies were adopted then by the House of Delegates as outlined in the preceeding pages under the subject of Social Security.

On October 16, in Omaha, Nebr. a regional meeting was attended which was sponsored by the Law Department, and the Medico-Legal Committee of the A.M.A. This meeting was in the nature of a Medico-Legal Symposium, and dealt with many of the problems confronting medicine, the legal profession, the courts, insurance companies, industrial commissions, and others, and the information and knowledge gained by attending this conference will serve in a very beneficial manner to our own State Association Medico-Legal Committee, which was created by action of your Medical Council last June. A more detailed report on these conferences was submitted to Council during its meeting on November 29, 1955.

Respectfully submitted

Jesse D. Hamer, Delegate

Phoenix, Arizona.

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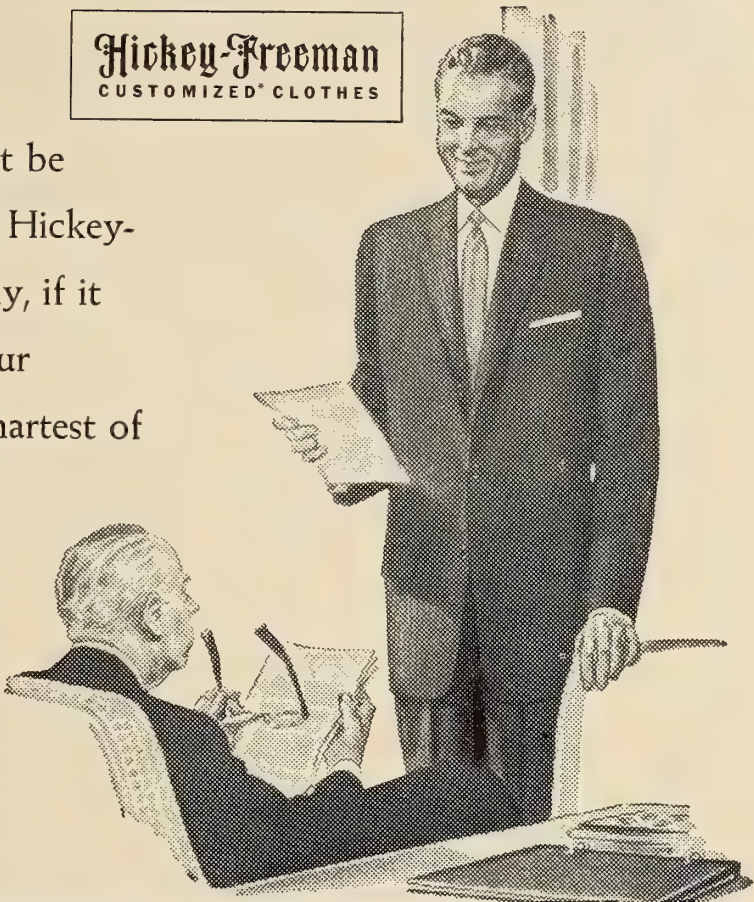
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Organization PAGE

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Norman Ross, M.D.

BOY SCOUTS OF AMERICA

ROOSEVELT CHAPTER

George F. Miller, Scout Executive
202 East Earll Drive, Phoenix, Arizona

FROM the July Issue: "Of interest state-wide is the notice from the Maricopa County Medical Society of a new policy on pre-camp health examinations. The examination, a screening type, is to be conducted by any and all members of this society without charge.

Only members of approved youth agencies are accorded the privilege of these free screening type examinations."

The following is a report from Mr. Miller of the effect of this program on his agency:

"It was with considerable skepticism that we learned early in 1955 of the new plan of conducting physical examinations for Scouts prior to Camp attendance. We were fearful that many boys would arrive in Camp without their exams and that we would be faced with innumerable tales of delay, etc.

Now, at the conclusion of Camp, we are more than grateful with the results of the new program. We had a few campers each session who arrived with no physical exams due to not having completed their appointment with the Doctor, and another small group who merely left the exam blank at home. This experience is about normal as compared with previous years as we have always been faced with this problem.

We feel that the new plan avoided the mass production set-up of the past where two and three hundred boys were examined in a single evening by a panel of doctors and feel that the individual boy possibly received a more thorough examination under the new plan than he did under the old plan.

Our Camp Doctor, of course, conducts a Camp re-check on every boy on his arrival in Camp and in no case this summer did he find symptoms that had not already been noted by the original pre-camp examination.

We want to take this opportunity to thank

the Maricopa Medical Association for their splendid cooperation not only in this pre-camp physical exam set-up but also for their cooperation in other Scouting matters during the past year."

* * *

AMERICAN RED CROSS MARICOPA COUNTY CHAPTER

329 North 3rd Avenue, Phoenix, Arizona
Mrs. Harvey Samuel, Secretary, Nursing Service

Of particular interest to physicians outside of Maricopa County is this program of the Red Cross as there may be a similar program in your area.

"Starting January 9, 1956, we are holding classes for expectant parents in Mother and Baby Care. These classes will meet Monday and Thursday evenings at Red Cross Headquarters. The course consists of six two-hour sessions, and are held from 7:30 to 9:30 P.M. in order that the expectant fathers may attend. As registration is limited to twenty per class, anyone interested is urged to telephone Red Cross to register.

A swimming for handicapped persons program has been set up, following an outline set up by National Red Cross. Any doctor interested in this program may obtain an outline and more information by calling Red Cross."

* * *

NATIONAL FOUNDATION FOR INFANTILE PARALYSIS

Public Relations Department
120 Broadway, New York 5, New York

EDITORIAL #2

"Now — for the first time — we have an effective means for controlling polio. The Salk vaccine, in the most extensive and careful field trial ever given a vaccine, was shown to be 60 to 90 per cent effective in preventing paralytic polio. The vaccine now being manufactured is even more effective.

"Every parent naturally has questions about the vaccine. Foremost is the question: Is the vaccine safe? The answer to this is yes. Last

spring, according to a U. S. Public Health Service report, live virus was found in a small amount of vaccine that had been released. More stringent government safety standards were promptly established to prevent a recurrence of this incident.

The difficulties of a single manufacturer do not, of course, reflect on the safety of all commercially produced vaccine, any more than the existence of one contaminated source of water suggests that water itself is unsafe.

During last summer there were suggestions that a single shot of the vaccine might give some protection against paralytic polio, and so parents may wonder if such an injection is not enough. The answer is that it is not enough for full and lasting protection.

The child with one shot has some help in defending himself against paralytic polio. The child with two has even more help. The child with three, properly spaced, has the full protection of the vaccine.

Everyone would like to know how long the effect of vaccine lasts. And no one can give a hard and fast answer, because we have not had the vaccine very long. A number of children who have received it will be followed through the years until we do know how long it protects.

However, because the level of protection after the third shot is so high, there is reason to hope that it will last for many years.

The third shot is in a sense the real key to the effectiveness of the vaccine. This is why we will look with growing interest toward the 1956 polio season. By that time enough youngsters should have received their complete series of injections to make a substantial difference in the nationwide polio rate. Then we will be able to look forward to final control of polio within a few years.

This past fall the vaccine program of the National Foundation for Infantile Paralysis was concluded in school clinics in all states. In these clinics youngsters from the first and second grades received their second shots of vaccine, and so did third and fourth graders in schools that participated in the 1954 field trials."

* * *

ARIZONA TUBERCULOSIS AND
HEALTH ASSOCIATION, INC.

111 East Willetta Street, Phoenix, Arizona
The Arizona Tuberculosis and Health Association's October symposium was called for the

purpose of obtaining a report on the progress of the state under the new TB Control Act of 1955. Reporting were representatives of the State Health Department, Maricopa County Health and Welfare Departments respectively, Pima County General Hospital, and Maricopa County Hospital.

As could be expected, the actual case load figures were *somewhat skimpy* as the act had been in effect for only one quarter. The problems of implementing the act were discussed at length. Throughout the meeting all speakers expressed pleasure with the spirit of cooperation met in all corners of the state as the administrative leaders in the various counties came to understand the meaning of the act.

With the cooperation of the local health units, county medical societies and interested community groups, a series of diagnostic and chest clinics is being arranged by the Arizona Tuberculosis and Health Association.

Serving as the committee planning this project are Drs. O. J. Farness; Lloyd K. Swasey; A. E. Russell; and Millard Jeffrey, Chairman.

These clinics will be in the nature of a demonstration for those areas of the state which currently are not receiving such a service. It is hoped this demonstration will lead to the effected expansion of the TB Control Program in Arizona. The committee is arranging for a panel of chest specialists who will assist in carrying out this program in the various localities where such a demonstration is indicated.

* * *

From time to time on this page we have pointed to the increased scope of our responsibility to our patients in matters of insurance coverage and as relates to their medical-legal and economic problems. We suggested in the May, 1955 issue that this matter would be dealt with by a local attorney in articles on this page.

We are pleased to report that a joint committee of the Maricopa County Bar Association and the Maricopa County Medical Society has published a Guide For Physicians and Lawyers in The Handling of Problems Arising Out of Personal Injury Litigation. The articles by a local attorney are not, therefore, necessary.

Members of the society in our state can obtain this pamphlet by addressing the Arizona Medical Association, Security Building, Phoenix, Arizona.

**NAT'L FUND FOR MEDICAL EDUCATION
COMMITTEE OF AMERICAN INDUSTRY
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The following relates to an announcement of a 13½ minute documentary film on medical education and can be obtained by addressing a letter or post card to Earl C. Bonnett, M.D. and Robert C. Page, M.D., Co-Chairmen:

"The film is in black and white, with sound, and it dramatically covers the highlights of medical education in America. It was produced in collaboration with medical school deans and educators, the "cast" comprising teachers and students, nurses and staff in the schools and teaching hospitals.

The Fund wants to make sure the picture is viewed as widely as possible, since it brings home to lay and professional audiences the time and skills that go into medical education — and the need to preserve our medical teaching programs.

We are hopeful that you may find it possible to bring the film to groups in your area — to workers and executives in industry, to medical and lay organizations. The film provides an interesting quarter hour. A kit containing "before and after" remarks and simple program ideas is available to help you set up a good meeting."

* * *

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This non-profit organization devoted to industry's medical problems announces that they have developed in the Department of Preventive Medicine at the Ohio State College University, College of Medicine, a residence training program in Industrial Medicine. A residency is now available to a citizen of the United States with a minimum of one year's training in a rotating or other acceptable internship as a pre-requisite.

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with the Civilian Aeronautics Administration Research Facilities and the School of Aviation Medicine at The Ohio State University, he may elect to specialize in Aviation Medicine; or he may elect to spend the third year in Atomic Medicine at The Ohio State University.

The fourth-year training is to be devoted to research projects.

The salary for the first two years is \$300.00 per month, thereafter it rises to \$500.00 per month. To date, Milher Inc. has paid all resident and intern salaries and has largely supported the remainder of the program. The program is in its fifth year."

* * *

**INTERNATIONAL COLLEGE OF
SURGEONS**

The Mid-Atlantic Section of the International College of Surgeons is holding a regional meeting at the Greenbrier Hotel, White Sulphur Springs, West Virginia, February 13-14-15.

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ARIZONA *Pharmaceutical* PAGE

THE PHARMACIST AND CIVIL DEFENSE

By Joseph Zapotocky, Ph.D.

College of Pharmacy, University of Arizona

THE Civil Defense Advisory Committee of the Arizona Medical Association, *Arizona Medicine*, and the collaborating authors are to be congratulated on the August issue of *Arizona Medicine* which featured civil defense. This compilation is a valuable contribution to a sound civil defense program needed both locally and nationally. It emphasizes the presence within this state of an informed and alert nucleus which is prepared for service in the event of a major disaster.

The pharmacists too are preparing to assume their share of responsibilities during such an emergency. Both the American Pharmaceutical Association's and the Arizona Pharmaceutical Association's Journals have kept pharmacists abreast of civil defense programs and of the role each pharmacist will be expected to play in this event. Civil defense bulletins have alerted the pharmacists of the state for a variety of duties. Previous experience qualifies them to handle the distribution of medical supplies in an emergency as they are and would be most familiar with the source, availability of drugs and supplies, limitation of supply and the preparation of drugs. There is perhaps no one other than the pharmacist, who is more aware of the numerous drugs possessing similar structure and activity which are available under a myriad of names, dosage forms, and strengths. In the absence of the physician, the pharmacist can advise of the correct use and administration of drugs.

Most pharmacists are either familiar with standard first aid procedures or are qualified first aid instructors. If during a disaster physicians are short handed, the pharmacist can be counted upon to administer first aid to relieve physicians for the arduous task of attending the more seriously injured. With estimated casualties in the hundred thousands and millions, in the event of a surprise attack, the potential assistance of pharmacists should not be overlooked.

The handling of narcotics and expensive drugs in great demand will require careful supervision by pharmacists to prevent the illegitimate use or loss of vital medical supplies to black market operators.

The strategic position of pharmacies throughout the country makes them useful for disseminating civil defense information to the public. The pharmacists who man them have already made valuable contributions toward educating the public for an emergency. In many communities, pharmacists have taken the lead in organizing civil defense programs for their area and in arousing the public interest in first aid programs.

The wholesale, retail, and hospital pharmacists of Arizona have inventoried their emergency medical resources and are increasing their supply of those items which may now be in short supply but which would be needed in large quantities in an emergency. Thus, the medical profession can count on the necessary supplies during an enemy attack. Pharmacists have also been assigned to each casualty clearing unit. Means of supplying the various first aid and emergency hospital stations are being studied. Much work remains to be done to perfect plans which are feasible and realistic.

No one group of the health team can act independently of the others. Doctors, nurses, and pharmacists have still to make great strides in coordinating their efforts into one master plan of operation in order to utilize each group to its greatest advantage. The plan cannot be adopted until each phase has been tried and tested for its practicality. Haphazard plans will only add to the confusion and the heavy toll of life during a disaster.

Notes from the EDITORS' PEN

CREEPING GOVERNMENT MEDICINE

The Washington Office of AMA in submitting its third annual report on federal health spending, a factual study based on budgets, appropriation bills, and information obtained directly from government agencies and departments, merits pause for review and a few searching questions.

This year the Department of Health, Education, and Welfare with almost a $\frac{1}{3}$ increase reaches a new high mark in spending for health and medical programs—more than half a billion dollars. Only two other agencies' medical spending is over the half billion figure, Defense Department and Veterans' Administration.

Compared with last year, HEW is spending 32% more in the health fields. The increase — \$127,754,900 — is explained largely by sharp boosts in funds for Hill-Burton hospital construction, for vocational rehabilitation, for medical research and for the medical care of the indigent, and by a \$30 million appropriation to purchase Salk vaccine and finance inoculation campaigns.

Total federal health spending also will reach a new high of over two and one quarter billion dollars during the current fiscal year, about \$2,268,800,000, a 6.4% increase over last year. Even in a national budget well up in the billions, this figure for federal medical-health spending is not inconsequential. It is about 15 times the amount needed to maintain Congress and the federal courts, 14 times the total budget of the State Department, and 4 times more is spent by either the Labor Department or the Post Office Department. Expressed another way, Uncle Sam puts up \$15 of every \$100 spent by the American people (publicly and privately) for health and medical purposes, from purchase of toothpaste to financing cancer research. A frank discussion of the problem with your Congressman and mine is long overdue.

H.R. 7225—SOCIAL SECURITY

H.R. 7225 is the bill which cleared the House of Representatives without public hearing during the closing days of the current 84th Congress. It is now pending in the Senate Finance Committee and extensive public hearings during the next session are anticipated. This is the measure providing substantial amendments to the Social Security Act. Most controversial is the section making permanently and totally disabled persons eligible at the age of 50 to receive social security benefits presently not available until age 65. Medicine is opposed to compulsory cash disability benefits. Inevitably, medical care will follow and on down the line toward more socialization.

The bill will further lower the retirement age for women from 65 to 62; extend monthly benefits for permanently and totally disabled children beyond the age of 18; and extend compulsory social security to all self-employed professional groups except physicians. Payroll taxes in 1956 will go up 0.5% on both employee and employer, and 0.7% on the self-employed. This same proportionate increase will be applied in 1960, 1965, 1970 and 1975, at which time the tax will reach 4.5% (6.75% for self-employed).

Keep this bill in mind. Now is the time to confer with your Senators and Representatives. It will be difficult for politicians to oppose such increased benefits in an election year despite its further leaning toward more complete socialization. Each of us will have to do much to stem the tide. You will hear more on the subject in the weeks to come. Be informed and prepared.

AMA PRESIDENT

The membership a few weeks ago was privileged to receive and hear Dr. Elmer Hess, President of the American Medical Association. His inspiring address in open meeting brought many favorable comments which reflected credit upon American medicine. Many thanks, Mr. President.

CONGRATULATIONS—COUNCILMAN

It is not surprising that Joseph Madison Greer, M.D. of Phoenix was successful following the November election in Phoenix and led all candidates in total vote cast. He has always been a leader and we expect him to continue during his term of office. Congratulations, Dr. Greer, and best wishes. Phoenix is in for continuing Good Government.

Woman's AUXILIARY

HIGHLIGHTS OF THE 12th ANNUAL CONFERENCE

MRS. Roy Hewitt, President of the State Auxiliary, and I as President-elect attended the 12th Annual Conference of State Presidents and Presidents-elect and National Committee Chairmen of the Woman's Auxiliary to the American Medical Association at the Drake Hotel, Chicago, Nov. 1-3, and came away enlightened and encouraged—enlightened as to the status of legislation pertaining to health, mental health, Civil Defense Nurse Recruitment. Mrs. Hewitt discussed Medical Social Workers, a comparatively new field which provides retraining of the patient to face illness and adjustment to conflict, perhaps in the home, on the Nurse Recruitment panel. — And encouraged by our contacts with doctors' wives from all over the U. S.

Other panels which were of especial value for us in our planning were on Organization, Program, "Bulletin", and "Today's Health", which is offering a new special contest for subscriptions for registered nurses. The nurses may this year only subscribe for \$2 between Jan. 15 and March 15. This contest could rightfully be a project for Future Nurses Clubs to push. There is a special prize of 20 gift subscriptions for the most nurse subscriptions, which may be given in the name of the County auxiliary which obtains them. Fifty cents of this sum is also kept by the local auxiliary treasury and the number of subscriptions is added to the total for the year.

The auto-safety film we saw points up Safe-Driving Day, which is Dec. 1, a day of special caution to avoid accidents. These films are available at the A.M.A. office. Another was on Medical Technician Recruitment and one on the A. M. E. F., sparked by Kate Smith. The American Medical Education Foundation has been established to assist medical schools financially. Less than one-fifth of their funds come from student tuition, and, of course, medical education costs, like all education costs, are increasing. The cost of maintaining a basic

medical faculty is \$1,250,000. In order not to let down standards of health care to the public, we will be alerting lay people of these facts during Medical Education Week, April 22-28, 1956, when we shall ask the public to contribute less than one dime for each of the 81 medical schools in existence on the 80-dimes card which you will receive. The October 8th Journal of the A. M. A. has an article on Education if you would like more information: also March 12, 1955, "Facts About Medical Students".

It is a myth, we were told, that **only** A students get into Medical schools. In fact, due to residence requirements, some state schools have difficulty filling their classes. The \$8 on the card will educate one doctor for one week.

We learned that Public Relations has shifted emphasis from mass to individual. Thus each of us can have an effect on H. R. 7225, the bill which has passed the House and is due to come up in the Senate in the Spring, which injects medical service into the Social Security Act for the first time. Doctors will be asked to determine the condition of permanent and total disability of people over 50 who apply for cash benefits and agree to rehabilitation, if this bill becomes law. It would be a gigantic program, the tax take for which by 1975 it is estimated would be over 20 billions, if it remains constant. You will receive more information later, but be studying it now. The A. M. A. has never opposed Social Security per se, but now that it is expanding into the field of medical service, it feels the need to speak, Dr. Howard said.

Mrs. J. D. Hamer also appeared on a symposium, composed chiefly of National Past-Presidents, to tell us of the problem of the History Committee.

We left feeling that it had all been most worthwhile, and I wish to thank the doctors for making it possible for us to represent Arizona there.

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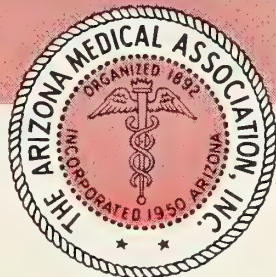
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|-------------------------------|-----------|------|
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| Boynnton, C. E. | AL 2-7572 | 817 |
| Butt, Byron G. | AL 4-2345 | 517 |
| Chiles, George H. | AL 4-1211 | 618 |
| Dunlap, Robert M. | AL 3-4312 | 702 |
| Hensing, C. R. | AL 3-6603 | 819 |
| Jesik, Peter | AL 8-3320 | 802 |
| Johnson, William J. | AL 3-1866 | 919 |
| Lee, Joseph A. | AL 4-2345 | 517 |
| Leibold, John P. | | |
| (Child only) | AL 8-3142 | 711 |
| Pafford, Ernest, Jr. | AL 3-3807 | 718 |
| Pafford, Ernest M. | AL 3-3807 | 718 |
| Scott, E. M. | AL 8-4277 | 918 |
| Sitkin, Frank L. | AL 4-2345 | 517 |
| Smith, Franklin R. | AL 4-3257 | 717 |
| Spillane, L. O. | AL 3-0461 | 821 |
| Steninger, Milo C. | AL 4-3561 | 621 |
| Voorhees, Joseph P. | AL 8-3320 | 802 |
| Oral Surgery | | |
| Bairo, Louis P. | AL 3-9362 | 711 |
| Borah, Charles E. | AL 3-7414 | 814 |
| Peterson, Ralph G. | AL 2-6313 | 719 |
| Stallcup, L. B. | AL 4-3675 | 418 |
| Orthodontists | | |
| Jensen, Albert J. | AL 3-2327 | 617 |
| Moffat, Richard P. | AL 4-1322 | 1017 |
| Periodontists | | |
| Burke, Wm. G. | AL 8-4644 | 818 |
| Creamer, R. Dean | AL 3-6534 | 820 |
| McGuire, Vaughn S. | AL 3-6718 | 1118 |
| Physicians & Surgeons (M.D.) | | |
| Cardio-Respiratory Diseases | | |
| Randolph, Howell | AL 4-3146 | 1005 |
| Dermatology | | |
| Mackoff, Sam M. (A) | AL 2-0379 | 920 |
| Medigovich, D. V. | AL 3-6617 | 905 |
| Endocrinology | | |
| Raddin, Joseph B. | AL 2-3577 | 619 |
| Eye, Ear, Nose & Throat | | |
| Barnet, E. G. | AL 4-3341 | 1120 |
| Cruthirds, A. E. | AL 3-5121 | 1011 |
| Gaskins, Duke R. | AL 3-8582 | 922 |
| Johnson, James L. | AL 4-2841 | 806 |

| Melton, B. L. | AL 3-8209 | 605 |
|---------------------------------|-----------|------|
| McCurdy, Gordon J. | AL 3-8209 | 605 |
| Nelson, W. J. | AL 3-5121 | 1011 |
| Reese, Forrest L. | AL 4-3341 | 1120 |
| General Practice | | |
| Barker, C. J., Jr. | AL 3-2176 | 710 |
| Barker, Robert D. | AL 3-2176 | 710 |
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| Dysart, Palmer | AL 4-8483 | 1108 |
| Felch, Harry J. | | |
| (Ob.S.) | AL 3-1151 | 705 |
| Holt, Clinton L. | AL 3-2883 | 520 |
| Hussong, R. W. | | |
| (Ob.G.) | AL 3-2883 | 520 |
| Matanovich, M. | | |
| (I.S.U.) | AL 3-6509 | 422 |
| McKenna, J. F. (A) | AL 4-2174 | 910 |
| General Surgery | | |
| Bate, Thomas H. | AL 4-3326 | 803 |
| Brewer, W. Albert | AL 3-4349 | 1116 |
| Greer, Joseph M. | AL 3-2240 | 1111 |
| Hansbro, G. L. | AL 3-8559 | 611 |
| Ovens, J. M. (Tumor) | AL 8-8074 | 608 |
| Ross, Norman A. | | |
| (Diag.) | AL 3-8353 | 810 |
| Shumway, Ord L. | AL 3-4349 | 1116 |
| Internal Medicine | | |
| Deitchman, Morris | | |
| (Ca.) | AL 2-1802 | 1008 |
| Gatterdam, E. A. (A) | AL 4-2174 | 910 |
| Hamer, J. D. (Ca) | AL 4-2174 | 910 |
| Hopkins, Doris F. (A) | AL 4-7509 | 402 |
| Kober, Leslie R. | AL 4-4153 | 1105 |
| McKham, Geo. G. | AL 4-8483 | 1108 |
| Milloy, Frank J. | AL 2-0142 | 611 |
| Snyder, Bertram L. | | |
| (Chest) | AL 4-2174 | 910 |
| Swasey, Lloyd K. | | |
| (Chest) | AL 4-2174 | 910 |
| Obstetrics & Gynecology | | |
| Barker, C. J., Sr. | AL 3-2176 | 710 |
| DePinto, Angus | AL 3-9112 | 707 |
| Smith, Gregory C. | AL 3-9112 | 707 |
| Ophthalmology | | |
| Aiello, John S. | AL 3-8582 | 922 |
| Burgess, Roy E. | AL 3-5604 | 822 |
| Franklin, Henry L. | AL 4-3738 | 805 |
| French, Harry J. | AL 4-1670 | 722 |
| Harbridge, D. F. | AL 3-5604 | 822 |

| Pediatric Surgery | | |
|----------------------------------|-----------|-------|
| Cloud, Daniel T. | AL 3-2933 | 706 |
| Plastic & Reconstructive Surgery | | |
| Lawrence, Howard C. | AL 8-4101 | 709 |
| Proctology | | |
| Jenkins, James T. | AL 2-2822 | 903 |
| Meyer, Wallace M. | AL 2-2822 | 903 |
| Psychiatry & Neurology | | |
| Barrett, Robert S. | AL 3-1491 | 606 |
| McGrath, Wm. Bede | AL 3-5559 | 811 |
| Radiology & Pathology | | |
| Foster, R. Lee | AL 3-4105 | 507 |
| Kennedy, John W. | AL 3-4105 | 507 |
| Watkins, W. W. | AL 3-4105 | 507 |
| Thoracic Surgery | | |
| Melick, Dermont W. | AL 4-3146 | 1005 |
| Urology | | |
| Faulkner, James W. | AL 8-6884 | 808 |
| Other | | |
| Arizona | | |
| Bancorporation | AL 2-4798 | 500 |
| Laboratory of | | |
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| Company | AL 2-9201 | 522 |
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Arizona Medicine

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Journal of ARIZONA MEDICAL ASSOCIATION

VOL. 13, NO. 2



FEBRUARY, 1956

TABLE OF CONTENTS

OFFICERS

| | |
|--|----|
| ARIZONA MEDICAL ASSOCIATION, INC., DIRECTORY | 6A |
| WOMAN'S AUXILIARY DIRECTORY | 6A |

ORIGINAL ARTICLES

| | |
|---|----|
| THE TREATMENT OF MIGRAINE | 41 |
| Roy C. Crosby, M.D., Boise, Idaho | |
| PHYSICIAN AND PATIENT | 49 |
| Louis J. Regan, M.D., Los Angeles, California | |

MEDICAL PROBLEMS

| | |
|---|----|
| PHOENIX CLINICAL CLUB | 53 |
| Ben P. Frissell, M.D., Phoenix, Arizona | |

PRESIDENT'S PAGE

| | |
|---|----|
| YOUR STATE MEDICAL ASSOCIATION MEETS THE LATTER PART OF APRIL.... | 62 |
| Harry E. Thompson, M.D., President, Arizona Medical Association | |

EDITORIAL

| | |
|--|----|
| DOCTORS OF ARIZONA. THIS IS MEANT FOR YOU PERSONALLY | 63 |
| TUBERCULAR OR TUBERCULOUS? | 64 |

TOPICS OF CURRENT MEDICAL INTEREST

| | |
|---|----|
| RX., DX., AND DRS. | 66 |
| Guillermo Osler, M.D. | |
| WHAT IS YOUR SCORE? | 70 |
| C. G. Salsbury, M.D., Phoenix, Arizona | |
| REPORT OF THE CONFERENCE OF MENTAL HEALTH | 71 |
| Richard E. H. Duisberg, M.D., Phoenix, Arizona | |
| NOTES FROM THE EDITORS PEN | 74 |
| ORGANIZATION PAGE Civics | 76 |
| Norman Ross, M.D. | |
| MEDICAL & DENTAL FINANCE | 80 |

WOMAN'S AUXILIARY

| | |
|-----------------------------|----|
| WOULD YOU BELIEVE IT? | 81 |
| Mrs. James Soderstrom | |

DIRECTORY

| | |
|----------------------------|-----|
| LABORATORIES | 33A |
| DRUGGISTS DIRECTORY | 35A |
| SANATORIUM DIRECTORY | 38A |
| PHYSICIANS DIRECTORY | 41A |

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THE TREATMENT OF MIGRAINE

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IN the evolution of medical diagnosis over the past several decades, medicine has progressed from the simple labeling of a group of symptoms and clinical syndromes to a more accurate understanding of the cause and pathological mechanisms involved in various diseases and disorders. This more exact knowledge has led to more accurate diagnosis. This holds true for many of the diseases and disorders which are treated today and has led to a greater specificity in therapy. Migraine occupies a middle ground of this evolutionary process. It still remains a symptom complex and must be diagnosed on a purely empiric basis: namely, by fulfilling the arbitrary criteria necessary to make this diagnosis. There is accumulating, however, more and more knowledge of the mechanism involved in the production of the migraine attack.

DEFINITION

Migraine is diagnosed primarily on the basis of fulfilling the following criteria:

1. The migraine attack is periodic with the patient free of migraine symptoms between attacks.
2. There is associated cephalalgia which is usually of the hemicrania type.
3. Gastro-intestinal disturbance is associated with the headache and usually comes late in the attack.
4. There is cortical disturbance associated with the attack which usually constitutes the aura of the attack.
5. There is a family history of migraine.

The most common cortical disturbance is visual scotomata or other disturbances in visual

fields. There may, however, be various other manifestations of cortical irritability such as unusual hunger, hemianaesthesia, parasthesia, and at times quite an elaborate progression of aura.

Most investigators require that four of these five criteria be satisfied in order to make the diagnosis of migraine. In the presence of three of the criteria where no other cause of the attacks can be found, this is ordinarily labeled "atypical migraine." By using such exact criteria for the diagnosis of migraine, many of the so-called migraine patients who do not actually have true migraine can be separated out and a more accurate evaluation of the true migraine patient made. By using these criteria, however, it can be seen migraine still falls into the type of disorder where the diagnosis rests on a purely empiric evaluation of a symptom complex.

There are certain related vascular types of headache which should be clearly separated from the migraine group. The first of these is the histamine cephalalgia of Horton. The histamine headache is certainly a vascular headache but differs significantly from migraine. The typical histamine headache begins in the early morning hours. It is associated with marked intolerance of the prone or recumbent position. It is associated(1) with generalized vascular phenomena such as chilliness and profuse perspiration. There is unusually an associated gastrointestinal disturbance; it also is periodic; and the cephalalgia may be of a hemicrania type. Cortical disturbances and a positive family history are not usually found in histamine cephalalgia.

Temporal arteritis (2) is another type of vascular headache, but here quite different from migraine. Temporal arteritis, for the most part, affects the older age group, principally over 50 and is a single prolonged temporal attack associated with swelling, redness and edema along the course of the temporal vessels either unilateral or bilateral. Blindness is a relatively frequent complication of temporal arteritis.

The common ordinary "tension headache" should be separated from migraine. Tension headaches are frequently vascular in origin or at least are associated with vascular symptoms. For example, persons with tension headaches frequently volunteer that pressure on the temporal vessels provides relief or that there are associated chilliness, perspiration and other vasomotor symptoms.

It should also be mentioned that certain migraine equivalents in the absence of headaches may occur. Patients may be encountered who have all of the criteria of migraine but do not have the headache. They may present themselves complaining primarily of elaborate aura or primarily of intermittent nausea and vomiting. Paroxysmal tachycardia also has a more than coincidental association with migraine.

CAUSE

Having defined the symptom complex necessary to make a diagnosis of migraine, it then becomes interesting to speculate on a possible cause or pathogenesis for the migraine attack. Food allergy is perhaps the most familiar precipitating cause of the migraine attack. It is certainly not at all uncommon to encounter a person whose migraine headaches are precipitated by chocolate or corn or various other food allergies. Actually, these are not true allergies but rather a form of idiosyncrasy. Indeed patients may be seen where specific medicines may produce a typical migraine attack. On rarer occasions, inhalant allergies may produce a migraine attack. These patients are relatively uncommon but have been described. As in so many diseases where the cause or basic pathological mechanism is unknown, allergy is proposed as one of the possible mechanisms involved.

A second possible cause involved in the production of the migraine attack is a hormonal mechanism. Occasionally a patient with rather typical migraine will be found who has a persistently low basal metabolic rate. These people

are not clinically hypothyroid but their metabolism is distinctly at a low level, and their headaches clear up upon the administration of thyroid. Unfortunately, these patients constitute a small minority of the group of migraine patients, but this possibility should usually be investigated since the response to thyroid medication is frequently rather gratifying. Ovarian mechanisms in production of migraine are also well known. The fact that the female migraine patient virtually never has a migraine attack during pregnancy, particularly in the first trimester, is evidence that some ovarian hormonal factors are involved in the pathogenesis of some migraine attacks. It is also well known that some women will have no migraine until menarche, will then have migraine until menopause, and have no migraine in post-menopausal period. Another group of female patients may have no migraine until menopause. Still a third and rarer group are those who will have migraine until menarche and then are rendered free of it. Male patients may have migraine until puberty and then be relatively free of further migraine attacks. It seems fairly clear, therefore, that at least in some patients, sex hormones have something to do with the genesis of the headaches. The possible role of the adrenals in migraine brings up some interesting bits of evidence. It has been reported from Mayo Clinic that patients with Addison's disease are usually rendered free of their migraine apparently by their disease. On control of their Addison's disease, the migraine attacks recur. There is also a certain group of migraine patients who respond very favorably to cortisone and ACTH. This implies some adrenal deficiency as a mechanism in migraine. This is hardly in keeping with the experience in Addison's disease but is nonetheless a bit of evidence that must be weighed in the balance when the mechanism involved in the production of migraine is assessed. It has also been noted that certain patients with migraine will respond well to massive doses of vitamin C given by vein during the acute attack. It is possible that the Vitamin C has its action directly on the blood vessels or on the cement substance of the blood vessels. It is equally possible, however, that the vitamin action is through the adrenal cortex, the integrity of which depends, among other factors, on Vitamin C. Other headaches of possible hormonal relationship are the headaches of high blood

pressure and the paroxysmal headaches with paroxysmal hypertension of Pheochromocytoma.

The possibility of mechanical factors in the production of migraine has also been speculated upon. Certain patients will have what appears to be typical migraine following the so called whip-lash type of cervical spine injury, usually resulting from an automobile accident when the head is suddenly snapped forward. Thermal mechanisms in migraine have also been speculated upon. These two mechanical situations, however, can usually be separated and patients suffering from headaches resulting from them do not conform to the criteria necessary to make a diagnosis of migraine.

Psychogenic elements as precipitating causes of migraine are well known. This, however, does not constitute a true or basic cause for the disorder. It simply means that the migraine patient has a low threshold as far as his vascular mechanisms are concerned, and psychogenic factors can trigger a migraine attack. Closely related to this mechanism is a cerebral dysrhythmia hypothesis of the genesis of migraine. The relationship of migraine to epilepsy has been pointed out many times. Certain patients with migraine will show EEG changes suggesting that migraine may be associated with a cerebral dysrhythmia. The question then has to be answered as to whether the dysrhythmia may not result from the vascular changes incident to the migraine attack.

Personality traits in migraine are rather constant. The migrainous personality, so called, is a rather perfectionistic, usually a highly intelligent person whose meticulousness pervades all aspects of his life. Persistent pursuit of perfection in whatever he undertakes is the bane of his existence. This type of personality, for the same reason, is subject to fatigue, and fatigue is a well known precipitating cause of migraine.

Finally in speculating regarding causes, the hereditary predisposition must be mentioned. This is apparently a dominant trait which is passed on and constitutes a predisposition but by no means implies a necessity for the development of migraine. Not all progeny of migrainous patients will necessarily suffer from migraine nor is it impossible to treat the patient with migraine to the point where the attacks subside or at least become infrequent. In conclusion then regarding cause, a fair statement might be

that there are many factors that may serve as precipitating causes of a migraine attack. *The migraine attack presumably results from an hereditary constitutional predisposition to react to a variety of stimuli with abnormal caliber reaction of blood vessels in the head with resulting headache.*

MECHANISM

When it comes to speculation regarding mechanism of headache in the migrainous patient, there is considerably more evidence upon which such speculation can be based. One mechanism of genesis that can be hypothesized is similar to the mechanism of Meniere's disease as described by Miles Atkinson (3,4), although in the migraine patient it tends to be somewhat more complex. In the migraine attack the assumption is that the branches of the external carotid artery are the reacting blood vessels, while in Meniere's disease only the labyrinthine vessels are involved. It is further assumed that the vessels are reacting to the release of histamine as a result of one of a variety of noxious stimuli. It is known that histamine affects the blood vessels of different subjects in different fashions or even the same subjects in different ways at various times(5). It is, therefore, not inconsistent that the branches of the external carotid react by constriction in one patient and dilation in another to the release of histamine into the blood stream.

The types of vascular response is one easy way of classifying migraine. First there is a relatively uncommon type of migraine that may be designated as the pure constrictor type. The constrictor type of migraine is one that is uniformly made worse by the administration of vasoconstrictors since this aggravates the underlying situation. These people characteristically feel cold during the migraine attack and do not have the perspiration and throbbing character of their headache that other migraine patients have. They get relief in part by heat and occasionally by alcohol ingestion. Nicotinic acid given very slowly by vein to the point of a flush and sustained for 30 seconds will usually control an acute headache in this type of patient.

A second group of migraine patients are those with a dilator type of headache. These people describe a throbbing type of headache associated with profuse perspiration and a sensation of marked warmth and improvement by exposure

to cold air. These patients respond well to the administration of vaso-constrictors.

Third is the most common group of migraine patients which might be labeled the phase reactors. These patients begin with a stage of constriction which is the time when they are having their aura. In other words, the aura constitutes cerebral cortical ischemia as a result of vaso-constriction. After the constriction stage, they then enter the stage of dilatation when they perspire, feel exceedingly warm, and develop a throbbing headache. Vaso-constrictors administered at this stage of the attack will provide satisfactory relief. If these people are left untreated, it is not uncommon for them to develop presumably swelling and edema about the branches of the external carotid as a result of prolonged dilation. When the edema has developed, they will then no longer respond well to simple vaso-constrictors but will require analgesia and usually large doses until relieved.

Finally, there are a certain group of patients in whom presumably there is concurrent existence of dilation in some areas and constriction in others. These patients are the most difficult to treat. That is, during the acute phase, such patients do not usually feel chilly or hot and do not appear pale or flushed. The headache may or may not be of a throbbing character. Usually the dilator mechanism supercedes the constrictor, and these patients do best on vaso-constrictors.

On a clinical basis, it is fairly easy to separate these various types of migraine patients, and it is extremely important to do so if rational treatment of the acute attack is to be given. The conclusion regarding the mechanism of migraine can be stated as follows: *The mechanism of headache in migraine is an abnormal caliber response of the branches of the external carotid arteries to the release of histamine into the blood stream of the constitutionally predisposed.* In other words, migraine represents a situation where specific blood vessels in the head become the shock organ of histamine release.

INTRAVENOUS HISTAMINE THERAPY IN MIGRAINE

In 1945, Butler and Thomas(6), published their preliminary observations on the intravenous histamine treatment of migraine. If the above reasoning regarding the mechanism of migraine is accurate, it would then seem reasonable to

treat migraine patients by histamine hyposensitization. It might even be further stated that if the basic cause of the histamine release in the migraine patient is a variety of noxious stimuli, then it would seem more reasonable to tackle the problem at the mechanism level rather than at cause level. In other words, if a migrainous patient could have the mechanism of reaction to histamine release in his system altered so that a migraine attack did not follow such a release, then a search for causes need no longer be pursued since this patient would then tolerate the histamine release without symptoms. It was principally with this line of reasoning that Butler and Thomas proposed to use intravenous rapid histamine hyposensitization for the treatment of migraine(7). Sporadic results have appeared in the literature since this time. It commonly happens, however, that the migraine patient receives not only the histamine treatment but also other forms of therapy at the same time which makes evaluation of this method of treatment difficult.

Personal experience with the rapid histamine desensitization has been quite variable. Many patients treated in this fashion have responded well, but it was difficult to ascertain exactly whether it was the histamine desensitization or other methods used, or even the physician's enthusiasm in the introduction of a new form of therapy that led to an improvement in symptoms. These patients usually have learned through visiting many doctors that the treatment of migraine is at best a rather unsatisfactory business, and consequently, their hopelessness fades with the physician's enthusiasm which must color the results somewhat.

In treating patients in the armed forces, large numbers of men must be seen, diagnosed, and treated in a relatively short period of time. Frequently, one does not utilize some of the refinements commonly used in civilian practice. Migraine in the soldier or in the military dependent is apt to be a rather difficult disorder to tolerate since it is hard for the uninitiated command to appreciate the misery from which the migraine patient suffers periodically and yet appears so healthy and active between migraine attacks. Since there were a fair number of patients reporting to sick call at the United States Army Hospital at Fort Hauchauca with migraine, it seemed that here was an opportunity to test the treatment of migraine by the

administration of intravenous histamine as the sole therapeutic weapon. This method of treatment adapts itself admirably to being given over a relatively short period of time. Once the necessary regimen is set up, it requires very little supervision and consumes very little time on the doctor's part. It was felt that it would provide a more satisfactory evaluation of the value of rapid intravenous histamine in the treatment of the migraine patient without other methods of therapy being used.

Only the most severe cases of migraine were selected for this therapeutic approach. There are many, many patients with mild migraine attacks occurring infrequently who do not need to go through this course of treatment. Patients selected were those who had headaches up to once or twice a week; some of the patients treated had only 2 or 3 headaches a month. All the patients treated satisfied the diagnostic criteria outlined above. There are a number of confirmatory tests for migraine including the administration of nitroglycerine sublingually or histamine subcutaneously or intravenously(8). In this series, tests to confirm the diagnosis of migraine were not made; however, the reaction to the intravenous histamine proved diagnostic test enough in itself.

The rationale of this form of therapy is as stated above that the migraine patient is given histamine over a period of time with the purpose of increasing tolerance to it. Tolerance then to the release of histamine into the blood stream will be increased to the point where the patient will not react with a migraine attack when histamine is normally released. Whether this actually entails the building up of the reserve of histaminase in the body is a controversial matter which need not concern us at the present time.

The method used in the cases to be described was as follows: 2.75 milligrams of histamine diphosphate (equivalent to 1.0 milligrams of histamine base) was placed in one thousand C.C. of 5% glucose in saline. This constituted the intravenous infusion which was given on alternate days for a series of four treatments. Before or immediately after such infusion is started 1,000 milligrams of Ascorbic Acid is given intravenously. Vitamin C appears necessary for the rapid intravenous infusion of this histamine solution. Whether this vitamin C has a vascular effect, adrenal cortical effect, or whether it is serving in the capacity purely of an antihistamine is a

moot point. During the course of the infusion, antacids are given and analgesics are administered if necessary. Headache, however, is controlled primarily by slowing the rate of flow rather than be the administration of analgesics. Because of the histamine's tendency to produce marked increase in gastric secretion and gastric acidity, any patient with a history of a duodenal ulcer or serious gastric difficulty in the past was not treated by this method(9).

During the course of treatment the following side effects and complications were noted and watched for. In the first place, one need only administer a small portion of the infusion rapidly, and prior to the intravenous ascorbic acid, to produce a typical migraine headache thus giving one a confirmatory test that migraine does indeed exist and further that this migraine is precipitated by the release of histamine into the blood stream. Surprisingly, this held true whether the patient had a constrictor, dilator, or mixed type of migraine, indicating that the type of vascular response is an individual idiosyncrasy of common origin. Headaches occurred fairly commonly during the course of the intravenous infusion, and was the usual cause for decreasing the rate of flow. Analgesics were required for the control of the headache during treatment in about one third of the treatments administered. Tachycardia, presumably incident to the vasomotor liability that is precipitated by histamine injection, occurred in approximately ten percent of treatment given and is controlled simply by decreasing the rate of flow. For the most part, these side effects can be readily controlled. It was our practice to describe to the patient what we were trying to accomplish and what the side effects might be. We then put a screw clamp on the intravenous tubing where the patient could reach it and regulate the flow themselves. The usual experience with migraine patients is that the first treatment will take anywhere from 8 to 10 hours, the time required gradually decreasing to the fourth treatment which will usually take 4 to 5 hours. With each successive treatment, they are capable of tolerating the infusion at a little faster rate.

Occasionally patients will be encountered where generalized urticaria may result from the histamine. This is a contra-indication to continuation of the treatment. Activation and bleeding from duodenal ulcers have been reported as a result of histamine treatment and is the reason

for the omission of any patient with a suspicious history from our series of patients. Insomnia is a relatively rare complication of this treatment, but it may be rather persistent and require bedtime sedation for 2 or 3 weeks after a course of treatment in order to re-establish a normal sleep pattern. Poor tolerance to intravenous histamine infusion is of itself of diagnostic import. The non-migrainous patient is usually able to take a similar infusion in something like two hours without undue discomfort.

RESULTS

The series of cases treated here at the United States Army Hospital at Fort Huachuca is a relatively small group, but it is rather interesting to note that results of treatment given here coincide roughly with the results reported by Butler and Thomas(10) as well as those reported by Horton(11) from the Mayo Clinic. In Butler and Thomas' series, there was marked relief in 58, moderate relief in 34, no relief in 12. In Horton's series, there was marked relief in 24%, moderate relief in 30%, no relief in 46%. In our small series of 15 patients we found marked relief in 4 or 27%, moderate relief in 8 or 53%, and no relief in 3 or 20%.

INDIVIDUALIZING THE MIGRAINE PATIENT

Before concluding this brief resume of the present status of the treatment of migraine, it may be well to outline an approach to the migraine patient. The patient with severe migraine is one who suffers a great deal. Unfortunately, all too frequently, when consulting his doctor, the migraine patient is told simply that there is very little that can be done for this condition; and he is given perhaps some ergotamine, analgesic or sedative.

While it is perfectly true that treatment of severe migraine poses an exceedingly difficult problem, it is still not impossible to provide this patient with a good deal of relief, both for the acute attack and for the prevention or decrease in frequency and severity of the attacks. Our approach to the migraine patient is, first of all, to attempt to determine the type of migraine that is present. This is ascertained from the history, particularly of associated vasomotor symptoms such as feeling warm or cold, flushed or chilled during the attack, improvement in the headache by pressure on the carotid vessels, improvement by exposure to cold air or warm

air. Aggravation by alcohol as a vasodilator or tobacco as a vasoconstrictor and prior response to the administration of vasoconstrictors are all data from the history which is quite useful in determining the type of migraine with which one is dealing. Physical examination during a migraine attack may occasionally be enlightening. If optic fundi are evaluated and compared as to caliber of retinal arterioles during and between headaches, some difference may be noted in some cases. Physical examination, for the most part, however, serves to exclude the other types of vascular headaches previously noted.

MEDICINAL THERAPY

Once the type of vascular reaction has been determined, then a suitable choice of medicinal agent can be made for the treatment of the acute attack. Ergotamine Tartrate or Octin are the vasoconstrictors of choice. Octin is suitable in oral form for the prevention or alleviation of headache until the onset of nausea. Ergotamine is less successful percentage-wise as an oral agent but used parenterally is successful in a high percentage of dilator headaches. For the relief of the acute attack, for the patient with the constrictor type of migraine, Nicotinic Acid given very slowly intravenously up to the point of flush will frequently provide relief and quite dramatically. It is also interesting to note that intravenous Nicotinic Acid in doses of 30, 40, or possibly 50 milligrams will produce in a normal person a marked flush. Patients with constrictor migraine may occasionally take up to 200 milligrams of Nicotinic Acid intravenously without showing flush and with only partial relief of headache. If constrictors or dilators fail to control the acute attack, one or two situations may exist. Either the patient is of a mixed concurrent type or is of the dilator type but has already progressed to the stage of perivascular edema so that the simple constriction of blood vessels is not sufficient to relieve the headache. Simple analgesia is necessary for this reason for some acute attacks especially if they are of long duration.

The second phase of treatment for the migraine patient should consist of attempts to prevent or to decrease the frequency of the migraine attacks. There have been many efforts directed along these lines. For patients with very frequent headaches that are of the dilator type, the use of oral constrictors on a regular

basis may occasionally be worthwhile. Great care should be exercised, however, in the regular administration of vaso-constrictors, bearing in mind that trophic changes at the tips of fingers and toes may result from long use of such agents. The antihistamines have generally proved disappointing in the treatment of migraine. Histaminase offered some hope initially but also proved of little value. Of the various antihistamines available, Dramamine occasionally will control the migraine patient and will more frequently control persistent nausea or vomiting after a migraine attack. Ascorbic Acid by vein during the acute attack may provide relief when all else fails. Taken regularly, orally, it may also serve to decrease the frequency of the migraine attacks. The histamine desensitization described above seems to be of distinct value in a certain percentage of the severe migraine patients. It probably is not indicated in the milder migraine where the attacks are infrequent and relatively easy to control.

Hormone therapy has long been used in migraine, notably thyroid and estrogens. Thyroid is helpful in the hypometabolic type of migraine. Estrogens are given since the estrogen excess of pregnancy seems to have a beneficial effect on migraine. Occasionally estrogen administered in cyclical fashion to the female or regularly by mouth to the male may serve to alleviate the situation. More recently ACTH in cortisone have been administered in migraine with a modicum of success.

Treatment of migraine as a food allergy should not be neglected. Occasionally patients can keep a dietary diary recording not only the foods eaten but the times of headache. By the review of such a diary with a listing of the foods ingested 24 hours prior to the onset of several headaches one can occasionally get a clue as to what food may be a precipitating factor in the production of the migraine attack. This method of approach has, in our experience, been successful rather infrequently but occasionally may yield results and is worthy of the effort in selected cases. Inhalant desensitization in the person with known inhalant allergies may also be part of the basis for therapeutic approach in rare cases.

The psychiatric approach to the migraine patient has in general proved practically rather unsatisfactory although psychiatric surveys with

alleviation of tension factors has proved beneficial in many cases. It is worthwhile to point out to the migrainous patient the personality traits in their pursuit of perfection which tend to precipitate migraine attacks and attempt to overcome some of the perfectionistic tendencies which the patient has. Unfortunately, these personality traits are very deeply rooted and insistence upon their correction may sometimes lead to more tension than it alleviates.

There are a group of miscellaneous agents which should be mentioned in the treatment of migraine. During the acute attack, the administration of oxygen is frequently of value, particularly in the dilator type that has progressed to edema in the perivascular tissues and is unresponsive to vasoconstrictors. For some reason that is not entirely clear, the administration of mebarol is an effective prophylactic agent in some patients. Those drugs which act primarily on the mid-brain with a sedative type of action such as the Rauwolfia group and thorazine may also be of value at times. Tolserol has been used in some patients on the basis that skeletal muscle spasm may play a role in the production of migraine. Benefit from using this drug, however, has been negligible in our experience. Massive doses of B12 have been used in migraine as in many of the other types of disorders that are difficult to treat effectively. Sporadic reports of improvement on massive doses of B12, a thousand micrograms two or three times weekly, have appeared indicating an occasional favorable therapeutic response. We have, as yet, been unable to find migraine patients so responsive.

SUMMARY AND CONCLUSIONS

1. The diagnostic criteria necessary to make a diagnosis of migraine have been outlined; at least 4 of the 5 criteria should be satisfied to make a diagnosis of migraine. The presence of 3 of the criteria in the patient who has no other apparent cause for periodic headaches may justify a diagnosis of "a typical migraine".

2. The criteria for diagnosis are: (a) periodicity; (b) cephalalgia, usually hemicrania; (c) cortical disturbance; (d) gastro-intestinal disturbance; (e) a positive family history. Other vascular types of headache have been described and differentiated.

3. Speculation regarding the cause of migraine leads one to the conclusion that there

are probably multiple noxious stimuli which may serve as the precipitating factor in migraine. The basic cause is apparently a constitutional abnormality in the reaction to the release of histamine into the system.

4. The speculation regarding the mechanism of migraine leads one to the conclusion that there are constrictor types, dilator types, and mixed types. These are assumed to represent the individual type of response of the branches of the external carotid artery to release of histamine. Our conclusion regarding the mechanism of migraine is that the headache production in migraine represents an abnormal caliber response of the branches of the external carotid artery to the release of histamine into the blood stream of those constitutionally predisposed. In other words, the branches of the external carotid artery in the patient with migraine serves as the "shock organ" with the release of histamine.

5. A rather limited experience in a controlled series of patients with severe migraine at the United States Army Hospital at Fort Huachuca treated with the intravenous histamine hyposen-

sitization, as described by Butler and Thomas with some modifications, has been reported. Results here are generally in conformity with the results previously described by Butler and Thomas and by Horton and consist roughly of $\frac{1}{4}$ markedly improved, $\frac{1}{2}$ moderately improved, $\frac{1}{4}$ no improvement.

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PHYSICIAN AND PATIENT*

By

LOUIS J. REGAN, M.D., LL.B.**

Los Angeles 17, California

THE physician enjoys unique privileges and opportunities. On the other hand he is burdened with special responsibilities and obligations.

The law requires that, if he presumes to take professional care of a patient, he must possess and exercise that degree of skill and care which is commonly possessed and exercised by other reputable practitioners in the locality in caring for similar cases.

The patient expects him to be a dedicated person,—gentle and kind, always available, inexhaustibly patient, everlastingly resourceful, and possessed of endless charity.

Both law and ethics join in exhorting him to put the patient's interest above all else, in requiring him to hold the patient's communications in confidence and to act toward the patient with the utmost good faith at all times.

Ethics is derived from the Greek "Ethos" and by extension, as we use it, it means conforming to professional standards of conduct. To such a standard the physician is bound. It is in his personal concern for his patient that the physician differs from the tradesman or the pure scientist. The secret of his successful care of his patient lies in his caring for the patient.

A good physician-Patient relationship depends not only on the rendition of the best possible medical service but also on maintaining the patient's confidence and friendship. Skill is no substitute for warmth and kindness. The art of the practice of medicine is of extreme importance to the patient and its good exercise is protective to the physician.

When the patient feels a positive assurance that he is in safe hands, the solace he gets does something to his blood pressure, his heart action and to the functioning of his gastro-intestinal tract. Emotional relief plays a part in healing organic disease.

It has been said that the physician is not a moralist. He must, nevertheless, possess high moral integrity. He has the opportunity, if not the obligation, to direct one under his professional care toward a useful and wholesome life

—if exercised, the effect may frequently be of distinct therapeutic value.

It hardly seems necessary to point out that this fundamental and wholesome physician-patient relationship cannot exist except where there is complete freedom of choice of physician and of patient. Certainly the climate is unwholesome if the relation is subject to the interest or control of any third party.

The physician also has distinct obligations toward his colleagues, toward the profession as a whole. He is the vital and basic unit in the creation of good or bad medical public relations. When every patient of every physician is pleased and satisfied with his medical care, medical public relations will be at the highest possible level.

Further the physician is a citizen and he must accept and exercise his community responsibilities. It is to him that the public rightfully looks for guidance and leadership in all health matters.

Before the physician may dispense or prescribe narcotics, he must register with the Bureau of Narcotics of the Internal Revenue Service; and reregistration must be effected on or before July 1, of each year, to avoid a penalty. Each year this requirement is overlooked by some physicians and unpleasant consequences ensue.

It should be borne in mind too that each state has its own statutes forbidding an attending physician to sign a death certificate in certain cases and that an autopsy may not be performed without valid authorization.

A physician is not likely to practice long in a given locality before it becomes necessary for him to appear in court as an expert witness. Today, justice is dependent to some extent on medical evidence in about half the cases brought to Appellate Courts in the United States.

There is a great and a growing distrust of medical expert testimony. Neither the courts, the legal profession or the lay public can understand how honest physicians can express such contradictory opinions. It is unfortunate indeed that so many believe that the physician witness will, to a considerable degree, say what

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he is being paid to say. Roscoe Pound, highly and rightfully esteemed in legal circles, has said that the medical profession should demand higher ethical standards for expert witnesses. It is urgent that this problem be recognized and that the medical group give it serious consideration. Medical experts should be conscientious, honest, and impartial. It is the privilege of the medical expert witness to assist the court and jury to arrive at the truth. Justice suffers when the testimony of opposing expert witnesses constitutes a battle of credibility rather than of science.

Of all the obligations and responsibilities burdening the physician, the greatest is without question the duty he owes his patient. It is in this that the real reason for his being is found. From the Hippocratic oath, to which we all have subscribed I quote, "I will follow that method of treatment which according to my ability and judgment, I will consider for the benefit of my patients and abstain from whatever is deleterious and mischievous."

The physician must, in applying his skill and knowledge to accomplish the purpose for which he is employed, exercise the degree of care, attention, diligence and judgment such as is commonly exercised by other reputable practitioners in the community. He must keep abreast of progress in his profession and he must utilize standard and accepted methods and procedures in diagnosis and in treatment.

Occasionally the course of action selected by the physician leads to more harm than good. Thus, we have iatrogenic—physician produced—disease states.

In diagnosis, the failure to make an early determination of incipient disease is an unfortunately common error that contributes to an unhappy course of events in the future.

Again, the physician's ability to make a satisfactory appraisal without betraying inaccurate impressions to the patient is important. A facial expression or a misconstrued statement during the diagnostic survey may have a decidedly adverse effect on the patient. The frequent production of cardiac cripples by misinterpretation of chest pains of functional origin is well documented. Equally well documented are the malpractice claims which eventuate.

In treatment the practice of using patent therapeutic agents without a thoroughly justifiable indication is to be condemned. There may

result an immediate relief of particular symptoms only to have a severe drug reaction develop—and a suit.

There are many diagnostic and therapeutic techniques in which the calculated risk of the procedure to be undertaken is very considerable. To defend successfully against a claim based upon an alleged injury resulting therefrom, the defendant must be able to justify what was done.

It is held (1) that any want of proper skill or care which diminishes the chances of the patient's recovery, prolongs his illness, increases his suffering, or, in short, makes his condition worse than it would have been if due skill and care had been used, would, in a legal sense, constitute injury. On the other hand it is the general rule that the result of a physician's treatment is not determinative of the performance of the physician's obligation. (2) A bad result, of itself, does not give rise to an inference that the physician was negligent or lacked in skill. (3) There is no implied warranty or contract as to the result which will be obtained. The physician may, of course, contract or promise that he will effect a cure or some specific result. (4) If he does so agree, he will be liable on his special contract if the promised result is not forthcoming.

The duty of the physician to possess and to exercise the requisite degree of skill and care is imposed by the law on the relation of physician and patient. The duty is not affected by the fact that the service is rendered gratuitously, or by the fact that the physician is employed by a third person.

The physician may by notice or special contract vary, limit or modify the duty owed to his patient. Thus, he may agree to treat the patient only at a certain place or for a limited time, or for certain conditions. Of course, one who holds himself out as a specialist must possess and exercise the skill and care of the specialist.

The physician is in a position of trust and confidence as regards his patient. Thus if he knows that he cannot accomplish a cure or that the treatment adopted will probably be of no benefit, it is his duty to advise his patient of the facts. If he believes that it would be in the interest of the patient to call in a consultant, he must either so advise the patient or bring in the consultant. If the patient has sustained an

injury due to the physician's negligence or lack of skill, the physician has a legal duty to inform the patient. It is extremely doubtful that the physician has a therapeutic privilege to withhold a specific diagnosis from a patient with serious or fatal disease. On the contrary it appears that in ordinary circumstances the confidential relation requires that the physician make a frank and full disclosure when his patient is adult, mentally competent, and questioning.

A physician is not required by law to accept any patient. He may, if he wishes, arbitrarily refuse the proffered professional employment even if he is the only physician available. However, once the relation of physician and patient is established, the physician has the continuing duty to give such care and treatment as necessary until his services are no longer required, unless he is sooner discharged or unless he withdraws from the case. The physician may withdraw from a case but he must first give reasonable notice of his intention to do so and he must allow the patient reasonable time and opportunity to fill his place.

The unwarranted abandonment of a case after its assumption will render a physician liable in damages if injury results. In a Mississippi case, (5) it was held that where a physician agreed without qualification to attend the plaintiff at her approaching confinement for a stipulated sum, it was no excuse that at the time treatment became necessary he was engaged with another patient and could not leave. In another case, (6) the court said that the fact that a physician has undertaken to treat so many patients that he has to neglect some of them does not excuse him from responsibility if harm results from such neglect.

Of course, the physician may not touch, let alone operate upon his patient without legal consent. Any adult in a clear state of mind may authorize any treatment or operation upon himself. If the patient is a minor, consent is generally to be obtained from parent or guardian. If the patient is mentally incompetent the consent of the one who stands in the position of guardian is required. In the case of surgery or any hazardous procedure written authorization should always be obtained.

In an emergency that demands immediate action for the preservation of the life or health of a patient and in which it is not practicable

to obtain his consent or the consent of anyone authorized to speak for him, it is the duty of the attending physician to perform without consent such operation as good surgical practice demands.

If sterility is likely to result from the procedure contemplated, explanation of that probability should be made and a signed authorization should generally be obtained from both spouses. On the other hand there should be no promise or guarantee that the patient will be sterile as the result of the procedure undertaken. Further, no sterilization procedure should be carried out except upon a positive medical indication.

It should be understood that, if an operation is unlawful, the consent of the patient does not absolve the surgeon from liability—at least from criminal liability.

Malpractice arises out of the relationship of physician and patient. First aid may be rendered in an emergency without the establishment of the relation of physician and patient. And neither is the relationship established: 1) when the physician makes a pre-employment examination for a railroad or other prospective employer; 2) when the physician performs an autopsy; 3) when the physician examines an applicant for life insurance on behalf of an insurance company; or 4) when the physician is appointed by the trial court to examine the accused to determine the question of the accused's mental competency.

Malpractice is defined as the failure on the part of the physician to fulfill his legal duty to his patient, as a result of which the patient sustains an injury. Otherwise expressed malpractice is the failure of the physician to care for his patient in a manner consistent with the standard of practice in the community. The standard of practice consists always of what the reputable practitioners in the community would do and in what they would refrain from doing in caring for a particular type of case.

Any patient may bring a malpractice action against any physician who has cared for him professionally. Today the likelihood of the practitioner being sued for malpractice is so great that it constitutes a definite occupational hazard; and no physician is immune. During the past eight years, in a number of metropolitan areas, the incidence of malpractice claims has increased by as much as 250

to 350 per cent. In 1953, in one area, one claim was advanced for each 21.6 physicians in the locality. Under such conditions the lot of the practitioner is an unhappy one. He has to realize that any patient he sees may sue him—particularly any patient with an unhappy end-result.

It is to be kept in mind, too, that the great majority of these claims are not meritoriously foundationed. They are not justifiable. Furthermore it isn't only the quack or the charlatan who is being sued. In some areas far more than half of these actions are brought against physicians who are above the median of their groups in standing, experience and reputation.

Thus it becomes absolutely necessary that the physician learn what he may do to safeguard himself, and how to put himself in the best possible position for efficient defense against the seemingly inevitable suit.

First and foremost, of course, he must care for every patient with meticulous attention to the requirements of good practice.

He must carefully see to it that there is a sufficiency of observation, investigation, and treatment including the utilization of every indicated laboratory aid. He must exercise care in selecting his assistants and in delegating duties to them. He must maintain a safe environment in which to work, causing instruments to be checked and apparatus to be calibrated as required in the exercise of ordinary care. His obligation comprehends, too, instructing those caring for the patient so that all things needed may be carried out during his absence and providing for the protection of those coming in contact with the patient. The physician must also recognize the importance of psychological factors and constructively influence the nervous, mental and emotional balance of his patient by tactful and intelligent handling, instituting such psychotherapeutic measures as may be indicated. His personal relation with his patient is of extreme importance; for a friendly patient, one who feels that everything possible is being done for him, is not likely to sue his physician even when the end result is less than perfect.

The physician has to rely largely on his case records to establish what the patient's condition was and just what was done about it. From a medicolegal point of view the impor-

tance of good medical records could not be overemphasized. It is wise for the doctor to ask himself, while he is caring for a patient, what he would like to have in the record if he has to use it one, three, or five years later in defending himself in court.

There is one other major safeguard which should be particularly stressed. It may be called protective consultation. It is strongly urged, upon the basis of medicolegal indication, that consultation be always had: 1) when the patient is not doing well; 2) whenever there is any unexpected reaction, untoward occurrence, or complication or sequela develops; and 3) whenever the patient or his family is unduly complaining or expressing dissatisfaction. Few malpractice actions will be lost wherein independent consultation we had. It is urged that physicians freely exchange consultations for their mutual protection. All findings, recommendations, etc., should, of course, be reduced to writing and be made a part of the case record.

Both medical ethics and the physician's recognition and acceptance of his obligation, prevent him from destructively criticizing the treatment rendered or the result obtained by a fellow practitioner. On the other hand, he will accept the opportunity to reassure and inform any patient who may be wrongfully condemning another doctor in respect to the latter's medical care.

Prevention is the best defense against malpractice. The measures here briefly referred to are considered of basic importance. It must be recognized that adherence to the highest possible moral and ethical standards, the constant exhibition of a high degree of care and skill, and the creation of the friendliest aura will not eliminate all false and unjustified claims of malpractice. But there will be few instances of injuries to physicians from misguided or malicious patients when our practitioners understand fully how to govern and protect themselves under the law.

The physician's every act should manifest his total acceptance of his obligations and responsibilities and thus reflect his just pride in his high calling.

1. *Craig v. Chambers*, 17 Oh. St. 253.
 2. *Pepin v. Averill* (Vt.), 32 Atl (2d) 665.
 3. *Crouch v. Wyckoff* (Wash.), 107 Pac (2d) 339.
 4. *Keating v. Perkins*, 293 N.Y.S. 197.
 5. *Hood v. Moffett*, 109 Miss. 757.
 6. *Young v. Jordan* (W. Va.), 145 S. E. 41.
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PHOENIX *Clinical* CLUB

The Case History in this discussion is selected from the Case Records of the Massachusetts General Hospital, and reprinted from the New England Journal of Medicine. The discussant under Differential Diagnosis is a member of the staff of the Massachusetts General Hospital. The other discussants are members of the Phoenix Clinical Club.

MASSACHUSETTS GENERAL HOSPITAL

PRESENTATION OF CASE 39042

A SEVENTY-FOUR-YEAR-OLD man was admitted to the hospital in an unconscious state.

Two hours before admission the patient suddenly collapsed. He did not cry out or give any outward sign of pain. When his physician arrived the patient was deeply unconscious and rigid, with pin-point pupils and an absent right carotid pulse. He was immediately sent to the hospital.

Four years before admission he was at another hospital because of fluid in the right side of the chest. Pertinent findings at that time included a history of mild hypertension for two years, mild exertional dyspnea and slight ankle edema for three years and mild epigastric distress relieved by diet for many years; physical examination revealed a Grade 1 apical systolic murmur, a Grade 2 aortic systolic murmur, fluid in the right pleural cavity, a few moist rales in the right lung and a blood pressure of 168 systolic, 100 diastolic. An electro-cardiogram showed left-ventricle strain; a roentgenogram of the chest demonstrated the right lower lung field to be obscured by fluid, the heart to be slightly increased in size, without any characteristic configuration, and the aorta to be calcified but not dilated. The patient improved on treatment with digitalis, Mercuhydrin and ammonium chloride and was discharged after two weeks. Two years before admission he had an undescribed episode, thought to be a cerebrovascular accident, from which he apparently made a complete recovery except for some residual weakness in the right leg. As far as was known, there had been no change in the state of his health in the few days or hours prior to admission.

Physical examination showed a well nourished man whose skin was cold and clammy, with profuse sweating. He was comatose, responding only by slight non purposive movements to painful stimuli. Respirations were of the Cheyne-Stokes type. The neck veins were distended but did not pulsate. There were coarse rhonchi throughout the chest, which obscured the heart sounds. The cardiac rhythm was regular, and the rate 60, and there was a loud, rough systolic murmur heard best to the right of the sternum at the base and a distinct early diastolic murmur heard in the same location and transmitted down the left border of the sternum. Pulses were palpable and strong in the left carotid and both femoral arteries but were absent in the right carotid and in both radial, popliteal, posterior tibial and dorsalis-pedis arteries. The abdomen was normal. There was xx pitting edema of the ankles. The pupils were 1 mm. in diameter and did not react to light. The eyelids were lightly closed and winked occasionally; the eyes were in the midposition, with occasional roving lateral conjugate movements. Corneal reflexes were present and equal. The face was symmetrical. The patient swallowed spontaneously several times. All four limbs were in rigid extension, with pronation of forearms, semi-flexion of wrists and fingers and strong plantar flexion of feet. There was great resistance to passive movements of the left arm, most marked proximally, and of both legs; this was present in both flexor and extensor groups. The right arm was much less rigid than the left, but when the head was turned to the right, the right arm became strongly extended. Tendon reflexes were generally brisk and equal; abdominal and cremasteric reflexes were absent; plantar reflexes were extensor bilaterally.

The temperature was 102°F., the pulse 60, and the respirations 28. The blood pressure was unobtainable in either the arms or the legs.

Examination of the blood showed a hemoglobin of 15.5 gm. and a white-cell count of 15,500, with 90 per cent neutrophils. The urine gave a x reaction for albumin, and the sediment contained an occasional hyaline cast; the specific gravity could not be determined because of insufficient quantity. A lumbar puncture re-

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vealed clear spinal fluid with an initial pressure equivalent to 140 mm. of water. The spinal fluid contained 413 red cells and 2 white cells per cubic millimeter and 40 mg. of protein and 79 mg. of sugar per 100 cc.

The patient's condition remained unchanged, and he died quietly twenty hours after admission.

DR. BEN P. FRISSELL

When I first read this protocol, I concluded that we were dealing with a fairly simple case of differential diagnosis of coma. However on closer scrutiny I soon found that I was in error. A possible and plausible answer to the comatose state of this patient would appear to be in the first paragraph of the protocol where we learn of the absence of the right carotid pulse. Ligation or occlusion of one carotid artery will result in death in only 15% of cases and produce symptoms of hemiplegia on the side opposite the lesion. Loss of consciousness may occur with this type of vascular occlusion as it does with a cerebral vascular accident. We have, however, many neurological findings in this case which do not fit the picture of a simple loss of blood supply to one or the other of the cerebral hemispheres; namely, bilateral rigidity of both extremities in extension with pronation of the hands and plantar flexion of the feet and also the presence of Magnus Kleijn reflex.

These findings are characteristic of so-called decerebrate rigidity and indicate involvement at the level of the brain stem. Assuming that vascular failure accounts for this complex, we must conclude that the blood supply to this area is obliterated and more specifically that one or both vertebral arteries are involved. This would appear to be logical enough when we find from further scrutiny of the protocol, that there are also absent pulsations in not only the right carotid but both radials, popliteals, posterior tibials, and the dorsalis pedis arteries. To very briefly review the blood supply to the brain, it will be recalled that the internal carotids supply the anterior and mid-portions of the cerebral hemispheres by giving off the anterior and middle cerebral arteries as well as the ophthalmic arteries. The vertebral arteries arise from the arch of the aorta adjacent to the common carotid and supply the brain stem area by joining to form the basilar artery, giving off the posterior cerebral arteries and entering into the Circle of Willis through the posterior com-

municating arteries which join with the internal carotids. The Circle of Willis is completed anteriorly by the anterior communicating artery connecting the two anterior cerebral arteries.

Having thus accepted the premise that our patient's unconscious state developed as a result of interruption of a vital percentage of his blood supply to at least one cerebral hemisphere and the brain stem, the problem shifts to that of determining the nature of the vascular pathology. We have a senile subject with history of arteriosclerosis and hypertension and evidence of heart failure preceding his death by at least seven years. Four years previously, his aorta showed calcification but no aneurysmal widening. There were described systolic phase murmurs at the base and the apex of the heart but no diastolic murmurs. At that time there was also electrocardiographic evidence of left ventricular strain but no evidence of coronary thrombosis. Two years before his death, he had what is assumed to have been a CVA with residual weakness of the right leg.

Can uncomplicated arteriosclerosis and hypertensive heart disease produce this clinical picture? We are accustomed to seeing elderly arteriosclerotic patients with absent arterial pulsations below the knee but seldom, if ever, do we find obliteration of arteries in the upper extremity in these patients. Could these changes be produced by thrombotic or embolic phenomena complicating arteriosclerosis? If so, we would be dealing with origin of emboli on the left side of the circulatory system. What are the common causes of such emboli?

1. Mitral stenosis with or without auricular fibrillation. We have no evidence of this type of heart disease and any emboli clearing a stenotic mitral valve should go far beyond the arch of the aorta before obstructing the vascular system.
2. Mural thrombi subsequent to myocardial infarction. Again we have no supporting history.
3. Emboli arising from heart valves in cases of bacterial endocarditis.
4. Emboli arising from thrombosis associated with subendothelial fibrosis secondary to nutritional deficiencies as seen in certain types of heart disease, particularly beri-beri hearts, etc. This is a rare and unlikely cause.
5. Thrombi arising around ulcerated intimal

plaques along the arteriosclerotic aorta. These are more apt to arise from the abdominal multiple vessels in the arch of the aorta.

Emboli tend to progress along the aortic channels until they wedge in a constricted area where the size of the vascular stream is materially reduced such as for example the so-called saddle embolus at the bifurcation of the abdominal aorta and in terminal branches of smaller arteries of the brain, the mesentery, etc.

What about other possible vascular diseases which might produce this picture? Thromboangiitis obliterans (Buerger's disease) differs from arteriosclerosis in that it involves both the venous and arterial systems and is capable of producing multiple vascular occlusions. However, this condition occurs in a much earlier age group than our patient, primarily in men. Again, as in arteriosclerosis, the lower extremity is most commonly involved but, likewise, the upper extremity and even the central nervous system blood vessels may be affected by this process. In fact, one of the differential points favoring this syndrome over arteriosclerosis is the absence of radial pulsations in the face of generalized vascular involvement in various parts of the body. However, these occlusions seldom come on abruptly as in our case. Intermittent leg pain, or claudication, is a prominent symptom lacking in this case. Cerebral vascular accidents are not uncommon but usually involve smaller blood vessels in the brain proper. It would certainly appear that there are gross omissions of fact in our protocol if this type of vascular disease accounts for the end picture as we see it today.

I come now to the point of departure, or of getting out on a limb, so to speak! I keep searching in my analysis of this case for some type of vascular accident which could produce a sudden "blowout" in a position to block off a major portion of the blood supply to the central nervous system and I keep coming back hopefully to the possibility of dissecting aneurism. I believe that this condition could best explain the sudden occlusion of the openings of several arteries coming off the arch of the aorta. This occurrence was undoubtedly of shocking suddenness and severity and the patient was soon in a state of profound traumatic shock as evidenced by pallor, cold clammy skin, absence of blood pressure, etc. Likewise, he promptly de-

veloped acute left-sided heart failure which helped to hasten his death.

The biggest stumbling block, of course, to this diagnosis is the absence of the cardinal symptom of characteristic severe and lasting pain which heralds the onset of the process of hemorrhage and burrowing into the layers of the aortic wall in cases of dissecting aneurism. I can only attempt to "alibi" that we are dealing with a senile subject with high pain threshold and that the suddenness of the impact of the vascular catastrophe was such as to stun him beyond expression of pain and as he lapsed into a state of unconsciousness from which he never rallied, there was no further perception of pain.

We are all acquainted with the fact that some of our elderly patients fail to react to painful stimuli as our younger ones do; for example, the elderly man with peritonitis subsequent to rupture of the appendix who has a mild bellyache and minimal signs of such a process and even very little in the way of fever and leukocytosis to indicate the extent of his pathology.

Dissecting aneurism occurs not uncommonly according to pathological reports, being reported in one to 380 autopsies. Classically this condition occurs in elderly arteriosclerotics who have a particular type of arterial involvement which is described as "medio-necrosis" or so-called necrosis of Erdheim. This is in contradiction to the usual type of arteriosclerosis which primarily involves the intimal layer of the aorta. Calcifications are more marked in medial necrosis and dissecting aneurism is much more apt to occur in this condition. Ordinarily, arteriosclerosis is more apt to involve the abdominal aorta whereas medial necrosis may involve the root and arch of the aorta. Hypertension is practically always present in these cases and elderly males are more vulnerable. In addition to pain, there are other symptoms which occur. Syncope and collapse are common. Death usually occurs in 1-2 days although cases of survival after a period of several months and even 1-2 years have been described in the recent literature. Absence of arterial pulsations in major arteries is commonly found as the burrowing process occludes the orifice of such vessels. This is particularly common in the mesenteric and renal arteries where the subsequent thrombosis of major vessels is seen and,

in our case, occlusion of several of the arteries coming off the arch of the aorta can be assumed. Leukocytosis and fever occur as the process continues to the point of necrosis, absorption, etc. In this case, there was fever but I believe it is more likely due to central nervous system irritation than to development of a necrotic process. Terminus is usually by hemorrhage into the pericardium, mediastinum, or the abdominal cavity. A diastolic murmur at the aortic area occurs as the result of distortion of the aortic ring by dissection at the root of the aorta. We have this type of murmur described in our protocol although it was not noted at the time of the patient's original hospital study four years before his death. The process of dissection in these aneurisms may vary. In some cases, it may involve the entire extent of the aorta to the bifurcation of the abdominal aorta; in others, a short distance of burrowing may occur before the process breaks through the outer layers of the aorta to produce perforation and sudden death. Coarctation of the aorta is commonly associated with dissecting aneurism. In this instance, we have no x-ray or other evidence that such a condition did exist. If so, it might explain very well the localization of the tear in the aorta. One author recently has stated that dissecting aneurism rivals syphilis in the number of disease entities which it can simulate clinically. The most often confused diagnosis is coronary thrombosis. It also has been confused with cerebro-vascular accident, mediastinal tumors, perforated abdominal viscera, etc. The pain of dissecting aneurism typically very closely simulates that of myocardial thrombosis. It is frequently described as tearing or crushing and, sometimes, as constrictive. The similarity in the pain of the two conditions is understandable inasmuch as a ruptured dissecting aneurism usually begins in the ascending part of the aorta and the pain fibres to this structure take the same course through essentially the same nerve roots as those which convey the pain fibers from the heart. Less frequently the pain is referred to the shoulders and the back. In our case, I believe it is conceivable that "grandpa" may have had considerable pain in his back or between his shoulder blades without conveying this information to anyone around him. It might very well be there was nobody around to talk to — or maybe he was in a state of senile depression and didn't want to talk

anyway.

My diagnosis, therefore, will remain, dissecting aneurism involving the root and arch of the aorta resulting in critical brain starvation by interruption of blood supply to the brain stem area.

DIFFERENTIAL DIAGNOSIS

Dr. Charles S. Kubik; This elderly man, who had had a moderate degree of hypertension, suddenly became unconscious and remained unresponsive throughout the hospital course. He was in a state of decerebrate rigidity. A question of anuria also comes up, but I cannot be sure about that. Was the patient catheterized? Was any urine obtained except for the specimen on admission?

Dr. Robert E. Scully; There was just one urine examination; no mention is made in the record of the urinary output during the hospital course. Can anyone give us any information about the urinary output?

Dr. Max Rukes; The patient was catheterized when he was in the Emergency Ward; a considerable quantity of urine was present, but I do not know whether it was formed before or after the episode that brought him to the hospital.

Dr. Kubik; The spinal reflexes — that is, the tendon reflexes — and also the plantar reflexes were present and there was some reflex activity from the brain stem. The patient swallowed — I suppose that is or was reflex swallowing; the corneal reflexes were present, and there were some rolling movements of the eyes and occasional blinking. Thus, there were no obvious indications of a lower-motor-neuron paralysis at any level. Because the onset was so sudden, this must have been a vascular condition of some kind, and diagnosis and localization must be considered from a vascular as well as a neurologic point of view.

The character of the onset and the symptoms themselves, would, I believe, be consistent with infarction of the brain stem and perhaps of the hypo-thalamus and optic thalamus, resulting from an occlusion of the basilar artery. That would account for loss of consciousness, pinpoint pupils decerebrate rigidity and extensor plantar reflexes. Furthermore, pulsation was absent not only in the right carotid artery but also in the vessels of the extremities. That leads me to consider an occlusion in the innominate artery, blocking off the circulation in the brachial,

vertebral and common carotid arteries, as the next explanation for the cerebral symptoms. That would not account for all the symptoms that this patient had. When the common carotid artery is occluded, as a rule the infarction is limited to the distribution of the middle cerebral artery because of the collateral circulation through the other internal carotid artery and anterior communicating artery. Occlusion of the vertebral artery may result in comparatively little disturbance because of the collateral circulation through the opposite vertebral and the internal carotid arteries. In the case under discussion collateral circulation would have been restricted to the left internal carotid arteries. In the case under discussion collateral circulation would have been restricted to the left internal carotid artery, which did pulsate. But this patient had pronounced atherosclerosis, calcification of the aorta and a cerebrovascular accident two years before admission he may have had others — so that some of the arteries that would normally have provided a collateral supply of blood may have been occluded. There is also the possibility of anatomic variations, which are not at all uncommon. There may be only one vertebral artery or one normal-sized vessel and one very small one. The anterior communicating artery may be quite small and, when arteriosclerotic, may be incompetent; sometimes, both anterior cerebral arteries arise from a single branch of one internal carotid artery.

Because of the small pupils, the sudden onset of pronounced coma and the decerebrate rigidity, I think that the circulatory disturbance must have involved the brain stem, whatever other pathologic process may have occurred. Extensive infarction in both cerebral hemispheres might result in decerebrate rigidity although I have never seen it. It does occur with cerebral hemorrhages and with severe head injury and was observed not long ago in a patient with anoxia resulting from an anesthesia accident.

What was the nature of the lesion? I believe one has to consider only three possibilities; thrombosis, embolism and dissecting aneurism. Dissecting aneurism has to be given serious consideration because of the absence of pulsation in the extremities, and yet it is hard to fit it in with the onset. Sudden loss of consciousness might take place if the dissection began near the origin of the innominate artery and

immediately resulted in its occlusion, but I should have expected the onset to have been more gradual and to begin, as it usually does, with severe pain as the initial symptom. If there was anuria, that would tend to confirm the diagnosis, with dissection extending downward and blocking off the renal arteries. The circulation to the legs was not completely shut off because the ankle jerks were still present. In a number of patients with dissecting aneurisms without involvement of cerebral circulation, there has been complete motor and sensory paralysis in the legs because of the peripheral ischemia. Another thing suggestive of a dissecting aneurism was the systolic aortic and early diastolic murmur to the left of the sternum although the systolic aortic murmur was present during the previous episode two or three years before entry.

Embolism would fit in best with the instantaneous loss of consciousness, but there was nothing suggestive of auricular fibrillation, myocardial infarction or any other source of emboli.

Can thrombosis be ruled out? There was marked atherosclerosis, and the onset of symptoms with thrombosis may be just as abrupt as with embolism; the thrombus may form gradually for a period and may not produce symptoms until the vessel suddenly becomes fully occluded.

I thought when I went over the case report the first time that the absence of pain and the immediate loss of consciousness probably ruled out a dissecting aneurism, but other features of the case may outweigh that consideration, particularly if there was a suppression of urine. I shall put that down as the first choice, although I am not too well satisfied with it, and thrombosis as the second choice.

Dr. Rukes; Even though the patient had no urinary output, could you attribute that to a dissecting aneurism? The patient was in shock, had no blood pressure in the arms or legs and probably had renal shutdown.

Dr. Kubik; If there was no urinary output, it would fit in with dissecting aneurism. We have had a large number of dissecting aneurism. We have had a large number of dissecting aneurisms, many of which have been discussed in these conferences, and cerebral complications are not very common but do occur. I do not recall a single case in which pain was not the initial symptom and a very prominent one. The

absence of pain and the sudden loss of consciousness would ordinarily rule out a dissecting aneurism.

Dr. Laurence Barrows; Is this a prominent site for thrombosis?

Dr. Kubik; No; but I suppose it could occur there.

CLINICAL DIAGNOSIS

Embolus to right carotid artery.

DR. CHARLES S. KUBIK'S DIAGNOSIS

Dissecting aneurism of aorta, with occlusion of innominate arter.

ANATOMICAL DIAGNOSIS

Dissecting aneurism of aorta and of innominate and right common carotid arteries, with occlusion of innominate artery and rupture into pericardial cavity.

Hemopericardium.

Cardiac hypertrophy, hypertensive type.

Cerebral arteriosclerosis.

Cerebral infarcts, old.

Nephrosclerosis.

PATHOLOGICAL DISCUSSION

Dr. Scully; At post-mortem examination, the pericardial cavity contained 100 cc. of clotted blood. The adventitial surfaces of the great vessels within the pericardium were hemorrhagic, suggesting at once a leaking dissecting aneurysm. The aorta disclosed, 5 cm. above the aortic valve, a spiral intimal tear that almost encircled the vessel; the tear communicated downward to the level of the coronary orifices and upward into the arch along the entire extent of the innominate artery, and for about 2.5 cm. into the right common carotid artery. A portion of the innominate artery was completely occluded. The dissection did not extend into the arch beyond the origin of the innominate artery.

Microscopically, the aorta and innominate artery showed the characteristic degenerative

change of the media known as idiopathic cystic necrosis.

The heart was hypertrophied, weighing 550 gm.; it was a typical hypertensive heart. The kidneys showed moderate nephrosclerosis, and the lungs slight to moderate edema. The remainder of the disease was in the central nervous system, and Dr. Richardson will tell us about that.

Dr. Edward P. Richardson, Jr.; The right common carotid artery above the point of occlusion by the dissection was patent, as was the right internal carotid artery. The left common and internal carotid arteries and both vertebral arteries were likewise found to be patent. The large arteries at the base of the brain contained many large atherosclerotic plaques, which greatly narrowed the lumen, but no total occlusion was found.

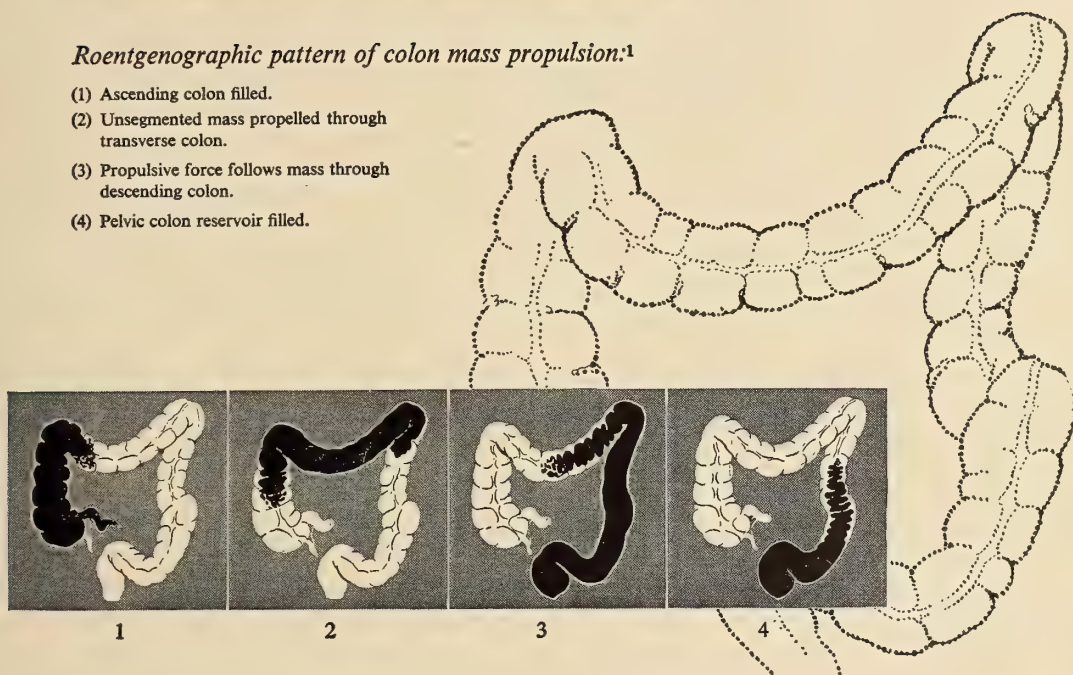
Examination of the brain disclosed a small cavity in the posterior limb of the internal capsule on the left side, entirely consistent with an old healed infarct. This lesion undoubtedly gave rise to the patient's residual weakness in the right leg. Since the patient survived only a few hours after the terminal episode, the other changes in the brain were less clearly visible. We did find small scattered areas of softening in the cerebral cortex bilaterally, and bilateral softening of the globus pallidus. Microscopical sections of such areas showed ischemic changes in the nerve cells, but no glial reaction. Much of the brain was of normal appearance. Undoubtedly, the impairment of function of both cerebral hemispheres was far greater than is demonstrable anatomically. We have evidence, as shown by the old lesion, that the circulation to the left cerebral hemisphere was already impaired. Apparently, the complete shutting off of the carotid blood supply on the right side was enough to produce ischemia of both cerebral hemispheres. No lesions were found in the brain stem and cerebellum.



SMOOTHAGE ACTION IN CONSTIPATION

*Roentgenographic pattern of colon mass propulsion:*¹

- (1) Ascending colon filled.
- (2) Unsegmented mass propelled through transverse colon.
- (3) Propulsive force follows mass through descending colon.
- (4) Pelvic colon reservoir filled.



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*Nervous fatigue, tension, injudicious diet, failure to establish regularity, too little exercise, excessive use of cathartics—all factors which contribute to constipation.*²

Sufficient bulk and sufficient fluid form the basic rationale of treatment of constipation. Metamucil (the mucilloid of *Plantago ovata*) produces a bland, smooth bulk when mixed with the intestinal contents. This bulk, through its mass alone, stimulates the peristaltic reflex and thus initiates the desire to evacuate, even in patients in whom postoperative hesitancy exists.

Correction of constipation logically, therefore, lies in the suitable adjustment of such factors as nervous fatigue and tension, improper intake of fluid, improper dietary habits, failure to respond to the call to stool, lack of physical exercise and abuse of the intestinal tract through excessive use of laxatives.²

The characteristics of Metamucil permit the correction of most of these factors: it provides bulk; it demands adequate intake of fluids (one glass with Metamucil powder, one glass after each dose); it increases the physiologic demand to evacuate; and

it does not establish a laxative "habit." Metamucil, in addition, is inert, and also nonirritating and non-allergenic.

The average adult dose is one rounded teaspoonful of Metamucil powder in a glass of cool water, milk or fruit juice, followed by an additional glass of fluid if indicated.

Metamucil is the highly refined mucilloid of *Plantago ovata* (50%), a seed of the psyllium group, combined with dextrose (50%) as a dispersing agent. It is supplied in containers of one pound—also four ounces and eight ounces. G. D. Searle & Co., Research in the Service of Medicine.

1. Best, C. H., and Taylor, N.B.: *The Physiological Basis of Medical Practice: A Text in Applied Physiology*, ed. 5, Baltimore, The Williams & Wilkins Company, 1950, pp. 579-583.
2. Bargen, J. A.: *A Method of Improving Function of the Bowel*, *Gastroenterology* 13:275 (Oct.) 1949.

SEARLE

*Your
State Medical Association
Meets
The Latter Part Of April*

This page today is to remind you to mark your calendars, and to set time aside for a very interesting meeting that will be held in Chandler, Arizona on April 25, 26, 27, 28, 1956. Your program chairman, Dr. A. I. Podolsky, has arranged an excellent series of papers that will be of great interest to specialists and general practitioners alike.

Mark this time off now, and make your plans for a wonderful 1956 meeting.

*Harry E. Thompson, M. D.
President, Arizona
Medical Association*

Editorial

ARIZONA MEDICINE

Journal of

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The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
 2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
 3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
 4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
 5. Submit manuscript typewritten and double-spaced.
 6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.
- The Editor is always ready, willing, and happy to help in any way possible.

EDITORIAL

DOCTORS OF ARIZONA. THIS IS MEANT FOR YOU PERSONALLY.

DO YOU know that the doctors of these United States again find themselves in an offensive action against the entrenched echelons in big government and in the legislative halls of this nation, where the battle ground is more and more Social Security? Consider the implications in HR-7225, passed by the House so precipitously last July, and now pending in the Senate.

The practice of medicine as we enjoy it today under the "free enterprise system," was threatened in the late forties and early fifties by the "Big Bertha Guns," three in number, and generaled by Messrs. Wagner, Murray and

Dingell. From the rear flanks were two United States Presidents and the director of the Department of Health, Education and Welfare, shooting the bazookas. These forces were soundly beaten by an aggressive American Medical Profession who spearheaded a direct frontal attack, with the assistance of hundreds of other organizations.

During the intervening years since the first Social Security Law was enacted in 1935, a more subtle approach toward the nationalization of medicine has been under way. Flank attacks have been made in legislative halls, from this direction and that, by the enactment of more and more amendments to the original Social Security Act. The bombardments have become more and more intensified by those who would place the practice of medicine under the control of big government since the defeats of the Wagner-Murray-Dingell bills. The first of these, the "Disability Freeze" enacted in 1954, and now the full-blown HR-7225.

These amendments have one objective in common:— the conversion of the practice of medicine into a federal function, and there you have it — Socialized or Nationalized Medicine, whichever term you wish to use.

These theories, these amendments, in part, are based upon the pronouncements of the International Labor Organization, whose gospel adopted over and over again during their conventions, is to preach, then to legislate the adoption of more and more social security, and socialized medicine, among other things, into every land, and upon a sympathetic catch phrase for the American people as something distributing the "ultimate good for the most people." This ballyhoo has a tremendous politically tenable theme song for our legislators who think they dare not vote against these schemes, and still retain their seat in Congress at the next election.

It seems to the advocates of these bills that medicine must be relegated to the category of a public utility, which cannot be allowed to operate unhampered as a private enterprise in this nation anymore. Medicine must be brought under government control. So when we have Social Security and Socialized Medicine, what

have we? Socialized government, of course.

One cannot stress too much how important it is for every physician and his patients to understand the implications of HR-7225, and how the enactment of cash disabilities benefits in this law will eventually affect the relationships of physicians and their patients. We may differ in our opinion about the whole Social Security program, whether it is morally or basically wrong, whether it is actuarially unsound, or fraudulent, or because it functions the only way it can, and that is, under socialistic compulsion. We doctors feel that no further amendments should be tacked onto this Act until a thoro investigation of the present law is made. This has never been done by any direct action of Congress, and a method to accomplish this purpose is suggested in the recent actions taken by the A.M.A. House of Delegates in Boston recently.

We doctors feel that we must oppose every attempt to extend or expand Social Security because every addition means either more taxes from present contributors, or more taxpayers forced into the system, and compelled to pay more and more taxes for uncertain and unsecured so-called benefits. True, past extensions and expansions with more taxes have saved Social Security scheme from exploding in the faces of the gullible American people, and probably avoided what would have been a necessary abandonment of the whole affair. Therefore, HR-7225 must be vigorously opposed and an honest effort expended to defeat it in the Senate Finance Committee, where hearings are being held, or on the Senate Floor if it is reported out of the Committee.

Enactment of cash payments for disabled persons of age 50 and over, to receive social security "benefits" not now available until age 65, would require physicians to practice socialized medicine because their determination of disability would be under the regulation, control and pay of the federal government. Also, enactment of this section of HR-7225 would establish the operative machinery for dispensing all medical care to all citizens under the regulations and control of the federal government, by more and more additions in the years to come. Further intrusion of the federal government into the health field would constitute the largest single steps towards overall socialization of medical care taken to date.

HR-7225 is a sinister plan, with menacing implications on the horizon of quality medical care and medical freedom. It is as dangerous as the old Wagner-Murray-Dingell bills, because its accomplishment will lead eventually to all the regimentation and socialization proposed by these bills. You are urged to study HR-7225 to secure a complete understanding of its future implications for yourself and your patients so that both of you will be prepared to participate in effective opposition. The bill can be defeated in only one way, by your letters, phone calls, and wires to the Senate Finance Committee, and to the two Senators from this state. A few hundred examples from physicians who have experience in attempting to determine "total and permanent disablement" of patients for insurance companies or the industrial commission will suffice to show these legislators what an unholy mess we physicians are going to be in; will suffice to cause them to think twice before enacting this Law.

J. D. H.

TUBERCULAR OR TUBERCULOUS?

ONE OF our excellent Arizona physicians who treats a great deal of tuberculosis has written a letter to the editor expressing his concern at the frequent use of the word "tubercular" by the daily newspapers and even by many physicians, who in the words of our correspondent "should know better." Since our correspondent has done some research into the usage of this word we quote him still further.

"The American Illustrated Medical Dictionary gives the definition of 'tubercular' as 'of, or pertaining to, or resembling tubercles or nodules.' The definition of 'tuberculous' is given as 'pertaining to or affected with tuberculosis.' Webster's International Unabridged Dictionary gives the following: 'The best authorities employ tuberculous for qualifying lesions of tuberculosis and restrict tubercular to non-specific nodules.'"

"Therefore, in the interests of good usage the phrase tubercular patient should be tuberculous patient or tuberculosis patient."

It seems to us that this is timely and worthwhile. There are a number of similar usages cropping up in our literature which are incorrect and many times confusing. An outstanding example in our area is the use of "coccidiosis" for "coccidioidosis" or "coccidioidomycosis."

Any medical editor with a little encouragement could cite more.

12/15/55 Discharge Note:
This 44-year-old man was admitted
on 12/8/55 with a history of fever, back pain
and dysuria of three days' duration. Urine culture
revealed mixed infection with gram-positive
and gram-negative organisms. Diagnosis: pyelonephritis.
Oral Terramycin therapy was instituted (2 Gm. the
first day, 1 Gm. daily for four days thereafter) in
divided doses q. 6 h. Patient was afebrile in 24 hours;
culture negative by second day of treatment.

R. Physician, M.D.

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TOPICS OF *Current Medical* INTEREST

RX., DX., AND DRS.

By Guillermo Osler, M.D.

THE TREMENDOUS grants by the Ford Foundation were a wonderful gift to the voluntary non-profit hospitals. It was a huge chore, but they simplified it by choosing all of the hospitals on the American Hospital Association's 'Administrative list.' They then assigned a sum for each hospital, based on the 'patient day' and hospital 'birth' information. It amounted to \$300 to \$500 per bed . . . The hospitals must now present their credentials as soon as notified, and give preliminary plans for use of the funds. Half of the grant will then be paid at once . . . The grants may not be used for deficits of operating expenses, but to improve and extend services to the community. This use may include new construction, additions to personnel, and conduct of research . . . If many of the hospitals use the money for their part of construction expense it could result in an increased request for Hill-Burton money from Federal sources . . . Public institutions were not included in the list, and neither were strictly private hospitals and sanatoria, tho there is a rumor that the latter may be considered in the future.

Alvarez, who would almost seem to have seen millions of patients, paradoxically argues in favor of FRIENDSHIP with patients. He believes a good doctor must have the common touch, and sincerely. He pities physicians who cannot or will not share the anxieties and sorrows of their patients. He treasures the friendships he has made, and the letters and cards he still gets from those he has known for 30 or 40 years . . . And so do I, doctor, and so do most of us.

This month's paragraph about a new method which might both be used and checked-on concerns treatment of nosebleed by an **intravenous estrogen** . . . The Premarin people (Ayerst Labr.) say that not only does the drug control uterine bleeding, but epistaxis, and bleeding from bronchial carcinoma and dental extractions. They postulate that it may have other uses in spontaneous bleeding . . . Trimble called attention to the helpful but violent effects of IV pituitrin for recurrent hemoptyses in tuberculosis. We hope that the use of estrogen does not require the presence of a bedpan and an emesis basin, as does the pituitrin.

C. D. Leake's monthly abstracts call attention to two items, one clinical and one experimental . . . Hoppe and colleagues say (in the Am. Journ. Med. Sciences) that **FERROUS GLUCONATE** is the safest and most effective type of iron therapy

. . . Okamoto tells (in the Tohoku Journal of Exper. Med.) that he has obtained **SPONTANEOUS DIABETES** by successive breeding of alloxan-induced diabetes. This would amount to an effect on heredity by an effect of environment.

Le Duc of San Diego reports a surprising item about **trichomonas infection** . . . It is hard to clear in the female, with literally hundreds of routines being tried . . . It is known to infect men, and the therapy has been said to be even more helpless . . . He advises suspicion of all urethritis in the male. Check the diagnosis by a hanging drop from a first-glass specimen for trichomonas . . . Then he says "Curative treatment is readily accomplished by the use of urethral instillations of Carbarsone suspension into the urethra, using 1 capsule per ounce of distilled water" . . . He has used the method for the past ten years and has found a uniform clearance on follow-up exam after treatment twice daily for a week.

Fuller and Castle of Baltimore have analyzed the use of **METAMINE**, a trinitrate salt. They find it has more effect per weight than the conventional vasodilators, including glyceryl trinitrate. It has a prolonged coronary vasodilator action, can be given by mouth and parenterally, and is effective in preventing angina pain. Intolerance is rare. Side reactions on the skin, blood, and G-I tract are rare. There is a scanty and relatively small hypotensive effect . . . It is worth usage and further investigation. (Thos. Leeming & Co., Inc., of New York make Metamine.)

Every now and then there comes along a piece of medical reporting (and possibly advertising) which delights one's risibilities. A Mr. Donald Cooley publishes a work by Drs. Olmstead, Cassidy, and Murphy called '**Beer** as an Adjunct in Low Sodium Diets' . . . An 1800 calorie diet which would contain 250 to 500 mg. of sodium can use beer to make up one-third of the calories for a total of only 45 mg. of sodium. It has no adverse effect on C-V-R function . . . This is the first pleasant idea about low salt diets we have ever heard, and the payoff is the source of the work — Mr. Cooley, et al., are from Milwaukee.

It was mentioned in this column two years ago that a probable cause of '**SWEATY ODOR**' was the action of bacteria on apocrine sweat . . . A recent report in the J.A.M.A. by Shelley and Cahn of Philadelphia substantiates the theory by



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MEDICAL DIRECTOR
DUKE R. GASKINS, M. D.

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There is no attempt on the part of HBA to set up the HBA schedule of fees as the amount to be charged by the doctor. The Surgical Bill Form which you fill out advises the patient that they should arrange with you for payment of any difference in the amount charged by you and that paid by HBA.

We do need the amount of your bill on the Surgical Bill Form so that we may pay direct to you rather than to the policyholder.

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Duke R. Gaskins, M. D.
Medical Director

DRG:bw

showing that antibiotic creams or lotions prevented the odor in a high per cent of cases. Neomycin was the best, 100% effective, as would be expected by other work on the topical use of that antibiotic . . . The authors do not mean to exclude the currently available aluminum deodorant materials, which they describe as "highly effective" for most individuals . . . The antibiotics were not effective when given orally . . . No comment was made about possible local irritation of the preparations.

Another author in 'The Modern Hospital' journal urges that patients be reminded of the equity which non-profit hospitals have in the care and welfare of the patients. The hospital invests 2 to 20 dollars per day in the patient, and he should know it . . . Hospital employees should remember it. The hospital is paying to get the patient well.

A Mr. Horwitz, trustee of a Cleveland hospital, suggests that we quit moaning about **NURSING SHORTAGES**, and trying inefficient expedients. Just **WRITE TO YOUR CONGRESSMAN** . . . Enough beer and bubble-gum are available, but they are produced by private enterprise for profit. The nursing profession has grown up under the aegis of the non-profit, tax exempt, deficit financing system, and the supply of nurses is short . . . He agrees that Congresswoman Frances Bolton has a fine idea. No one else can arrive at a solution. The Congress should act as an impartial outside agent to help the public welfare by examining the situation and coming up with a way to get more nurses . . . So, just write to your congressman woman.

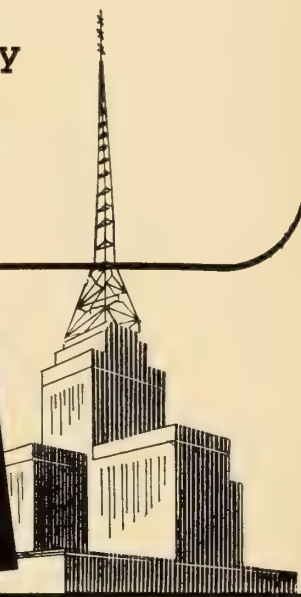
An Italian hospital examined more than 600 patients with asthma to find out what per cent was sensitive to drugs. About 8.4% of the patients were reactive to some drug, and 3.7% were allergic to aspirin . . . None of the patients had drug allergy as primary cause of the asthma.

The Bulletin of the Nat'l. TB Ass'n. has several hard-hitting articles by several prominent specialists . . . Hinshaw of San Francisco says that **TB NOW IS A DIFFERENT DISEASE** because we have potent weapons against it. The positive sputum case should be found, persuaded to accept care, treated until the process is complete, and 'detained' if there is a refusal. It will become a crime for an infectious person to be at large. Persons who evade medical care can often be recognized by x-ray; they are usually the chronics and the relapsers . . . Dr. Edna Jones of Detroit not only uses **CHEMOTHERAPY (INH-PAS)** for children whose tuberculin tests have recently converted to positive, but to any child with recent exposure to TB, whether positive or negative by skin-test . . . Dr. Daniel Zahn of Seattle attacks 'HOME CARE' of TB. Ninety-five per cent of the positive sputum cases in his city are hospitalized, since early care requires isolation, and the best results come from hospitalization . . . John O'Connor of Shelton, Conn., urges that the future care of TB patients will require a special knowledge of **GERIATRICS**. The older cases are being found more slowly, and it is a weakness in present day case-finding. Fifteen years ago 52% of his hospital admissions were under 30 years of age, and 6% were over 60. Recently only 23% were under 30, and 22% were over 60 years.



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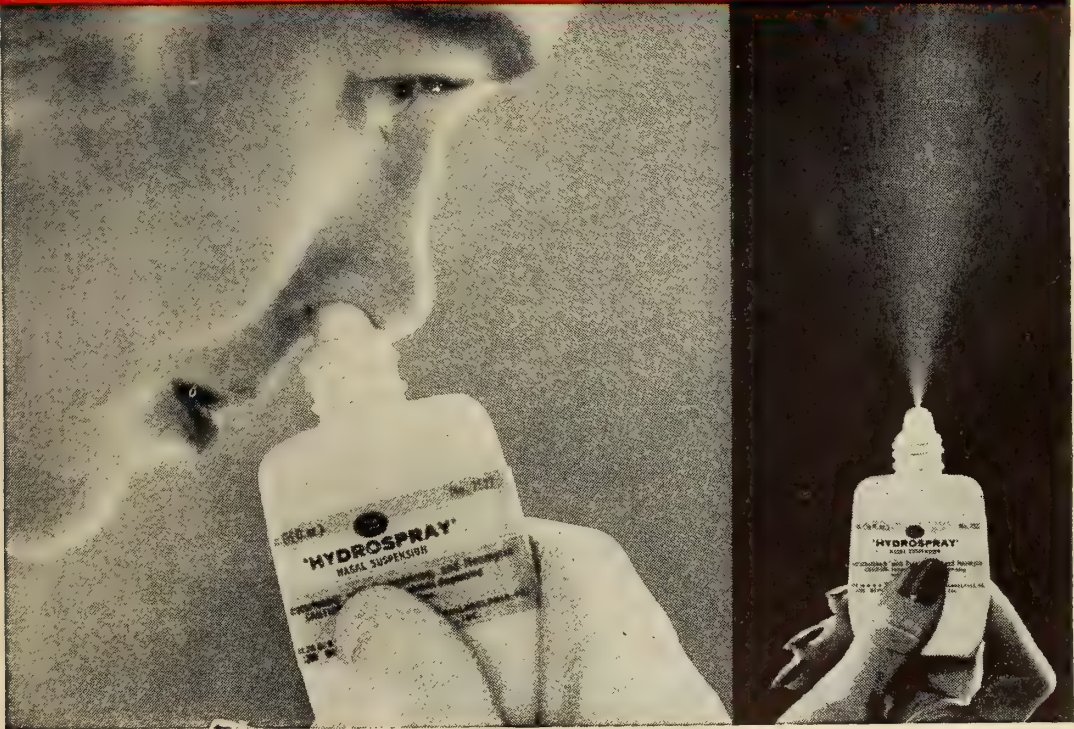
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SUPPLIED: In squeezable plastic spray bottles containing 15 cc. HYDROSPRAY, each cc. supplying 1 mg. of HYDROCORTONE, 15 mg. of PROPADRINE Hydrochloride and 5 mg. of Neomycin Sulfate (equivalent to 8.5 mg. of neomycin base).



Philadelphia 1, Pa.
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REFERENCE: 1. Silcox, L. E., A.M.A. Arch. Otolaryng. 60:431, Oct. 1954.

WHAT IS YOUR SCORE?

Test your knowledge of Arizona's health laws by this Quiz prepared at our request by Dr. C. G. Salsbury, Commissioner of the Arizona State Dept. of Health. Answers on page 81 — ed.

I. Venereal Diseases — General

- A. Which of the following diseases are defined by law as dangerous communicable venereal diseases? (1) Syphilis; (2) Gonorrhea; (3) Chancroid; (4) Lymphogranuloma venereum; (5) Granuloma inguinale.
- B. The law requires that every practicing physician give notice in writing of every case of venereal disease under his professional observation within: (1) immediately; (2) 48 hours; (3) one week; (4) one month.
- C. In counties and districts having full-time health officers, reports shall be made to the full-time health officer. In cities and counties without full-time health officers, reports shall be made to: (1) county clerk; (2) Arizona State Department of Health; (3) nearest health department.
- D. The primary responsibility for identifying and bringing under treatment the probable source of the patient's infection and other exposed persons is with the: (1) local health department; (2) the patient; (3) the physician treating the case.
- E. If a patient or contact refuses to co-operate or undergo examination, the physician shall: (1) notify the appropriate health authority; (2) notify the police department; (3) do nothing further.
- F. A person afflicted with a venereal disease in a communicable stage may not work in an establishment where food or drink is prepared, bottled, packed, manufactured, offered for sale or sold. True... False...

II. Venereal Disease — Prenatal Physical Examination Law.

- A. Any physician attending a pregnant woman for conditions relating to her pregnancy shall during the period of gestation and at the time of first examination: (1) take a blood sample only at patient's request; (2) be required by law to take a standard serologic test for syphilis; (3) tell the patient to get a blood test sample after delivery.
- B. Upon finding a positive serologic test taken from a woman in pregnancy, the attending physician shall determine whether syphi-

litic infection exists and (1) refuse to treat the patient unless her husband also receives treatment; (2) treat or make an effort to treat the patient before the fifth month of gestation; (3) start a series of Rx giving one shot of penicillin immediately and the remaining therapy after delivery.

- C. Birth and stillbirth reports must state: (1) nothing concerning a blood sample taken; (2) the name and place of laboratory doing the serologic tests; (3) whether or not a blood test was made and the approximate date the specimen was taken.
- D. Blood samples must be sent to a laboratory approved by the State Board of Health and these tests are made without charge. True... False...

III. Venereal Disease Control Laws.

- A. A person with an infectious or contagious disease, known to the local health board, can be (1) removed from the state; (2) forced into a penal institution; (3) put into strict quarantine; (4) left alone if no more infectious persons are reported.
- B. Any person who secretes himself or others, known to have a contagious or infectious disease, or any member of the Board of Health who shall neglect to perform his duty or neglects or refuses to conform to the directions or instructions of health boards shall: (1) be guilty of a misdemeanor; (2) shall be punished by a fine of not less than \$10 or more than \$50; (3) may be punished by imprisonment in the county jail not exceeding 30 days; (4) if a physician, have his license revoked; (5) all of them.
- C. Any person who shall receive money or other valuable things for procuring or placing in a house of prostitution any female and cause her to cohabit with male persons shall be: (1) guilty of a felony and be imprisoned; (2) fined and made to pay the fine for the female; (3) turned loose, but the female fined.

11TH NATIONAL CONFERENCE ON RURAL HEALTH SCHEDULED

The 11th National Conference on Rural Health, featuring the theme "Your Doctor and You," will be held at the Multnomah Hotel, Portland, Oregon, March 8-10.

REPORT OF THE CONFERENCE OF MENTAL HEALTH REPRESENTATIVES OF STATE MEDICAL ASSOCIATIONS AMA HEADQUARTERS, CHICAGO HELD NOVEMBER, 1955

THIS MEETING, the second annual conference of its type, was well-attended by delegates of approximately 30 states as well as by numerous other individuals interested in mental health problems. Preliminary addresses were given by Dr. Leo Bartemeier, chairman of the AMA Council on Mental Health, Dr. George Lowe, secretary and general manager of the AMA, and Dr. Elmer Hess, president of the AMA.

Following is a brief summary of those proceedings which are considered to be of interest to general practitioners and specialists in psychiatry, as well as specialists in other fields:

NARCOTICS PROBLEM

This subject was introduced by papers read by Dr. Robert H. Felix and Dr. Harris Isbell.

Dr. Felix discussed the Harrison Act, its history and its defects. He pointed out that this law leaves the addict with a choice between crime on the one hand, and abstinence on the other hand.

There followed a summary of the AMA's attitudes toward addiction since the early part of the twentieth century, culminating in the present policy. The AMA continues to oppose ambulatory treatment. Two federal institutions for the care of addicts have been inaugurated. Follow-up after-treatment is still being strongly recommended. The greatest stress at the present time is being placed upon the study and treatment of underlying causes, physiological and psychological. "Emotional reintegration" is being emphasized.

The New York Academy of Medicine emphasizes the fact that the addict is sick, not criminal, and encourages therapy with minimal drugs, educational programs and more research. Concerning the educational problem, opinion is divided. Some authorities feel that discussion of narcotics addiction in schools is likely to stimulate interest and attention.

Only 10% of narcotics is used medically!

Dr. Isbell defines addiction as:— primarily a psychiatric problem complicated by socio-economic and pharmacological factors. Of these, only the latter are easily managed.

He described the treatment of narcotic addicts at the institution at Lexington, Kentucky. The first step, detoxification or withdrawal, is the only relatively easy one. The withdrawal syndrome is, he pointed out, self-limited and never fatal. Replacement drugs are not absolutely essential.

Further steps consist of:

Physical rehabilitation.

Vocational rehabilitation.

Psychiatric rehabilitation.

Preparation for discharge.

Post-institutional treatment. The inadequacy of facilities for the latter was pointed out.

The average stay of patients ranges from 30 to 155 days.

Results: Approximately 15% of the addicts abstain for a period of one year. Another 15% abstain after a second or third period of hospitalization.

There followed some general discussion of research progress in drug effects, bio-chemistry, pharmacology, neurophysiology and psychiatric aspects. Concerning the latter, it was pointed out that relief from "physical dependence" (pain, hunger, thirst, sex) is not merely a negative reaction but is pleasurable. When addiction occurs, an artificial biological need, which overrides other motivations and is easily satisfied, has been created. Dependence is important in relapse. The former addict, motivated toward regression and away from stressful stimuli, resumes the use of his drug.

Concerning pharmacology, Dr. Isbell stated that it is not expected that a non-addictive analgesic or sedative drug will be found! There are now considered to be five chemical classes of such drugs, including barbiturates and other synthetics.

A legal point: It was suggested that it would be advisable to implement the law's provisions by stating that any drug having the "addiction forming" or "addiction sustaining" properties of either morphine or codeine can be legally declared an "opiate."

* * *

INTEGRATION OF MENTAL ILLNESS AND MENTAL HOSPITALS WITHIN THE TOTAL MEDICAL COMMUNITY

Dr. Walter Barton of the Boston Psychopathic Hospital presented a paper which reiterated some of the well-known statistics. 800,000 hospital beds (more than half of all hospital beds)

are occupied by mental patients. 98% of mental patients are in public institutions. Of new admissions, a higher percentage is made up of senile and cerebral-arteriosclerotic patients than of schizophrenics. This is the reverse of the previous ratio. The population increase in the United States during the past 10 years is 20%. The population increase of state hospitals during the same period is 44%. It was mentioned that nationally 40% of patients admitted to state hospitals are discharged within 5 years. In the Boston Psychopathic Hospital, 80% of the patients are discharged within 1 year.

The need for facilities for extramural treatment as well as intramural hospital treatment was emphasized. The hospital's responsibility for fostering "external relations" with the patient, the patient's family, the patient's physician, local welfare and health agencies, both private and public, and with the public in general, was stressed.

The medical profession's responsibility toward the growing mental hygiene needs of the public was cited. The general practicing physician needs to continue to develop and cultivate skill in interviewing and exploring, and in counselling and guiding his patients. The physician should aid the patient in learning to use his own resources. The physician must perpetually remind himself that he is treating a total patient or "whole organism," and therefore seek to ascertain the emotional concomitants or complications of illnesses.

The close liaison which the Boston Psychopathic Hospital maintains with the general practitioners and specialists of medicine on the outside would appear to be exceptional. This hospital has various in-hospital services on which physicians of the community serve in the identical manner in which they serve on the staffs of the general hospitals, such as the county hospitals.

Another feature of the Boston Psychopathic Hospital is its intimate liaison with service organizations. The hospital obtains help and cooperation from 146 local and state organizations.

Concerning out-patient facilities, it was stressed that the state hospital and the family physician of the patient should work cooperatively. To this end, it is routine to send a note, at the time of the patient's discharge from the hospital, not only to the judge who committed the patient and to the appropriate social agen-

cies, but also a note to the family doctor. This note includes a dynamic formulation of the patient's illness, as well as diagnosis, prognosis and recommendations.

* * *

RELATIONS BETWEEN PHYSICIANS AND CLINICAL PSYCHOLOGISTS

This matter concerned itself chiefly with discussion of policy regarding licensing or certification by legislative acts, of clinical psychologists. The topic has particular interest to Arizonans in that there is as yet no state legislation of this type. Therefore, we here can start with a clean slate. The need for some regulation and legislation has been recognized, and both the medical and psychological men have been wrestling with the problem for several years.

The conflicting viewpoints on the subject of licensing or certification of psychologists between the AMA and the APA were discussed by Drs. Francis Gerty and Paul Huston, respectively. There ensued considerable and somewhat heated discussion. In the end, a subcommittee was formed, which immediately met in special session and came up with resolutions which were to be submitted to the AMA for official approval.

The essential features of these resolutions are:

That the AMA go on record as approving certification (not licensing) for psychologists. That such certification laws include a "disclaimer" clause which is specifically to state that nothing in the act shall be construed as giving psychologists the right to practice medicine.

It is further recommended that such certification laws omit definition of the duties or activities of psychologists, but confine themselves to statements of the qualifications and requirements a psychologist must have in order to be certified.

It was suggested that those states which now have no laws concerning psychologists attempt to model their certification bill along the lines of the New Jersey bill.

We hope that the AMA will approve these resolutions so that we may go ahead with appropriate local legislative plans. The reputable psychologists of Arizona have been extremely patient and cooperative. It will be gratifying to be able to encourage their efforts at taking concrete steps to formulate local standards for certification.

ODDITY

During a period of general discussion of numerous topics, a set of resolutions made by the State Medical Society of Idaho was presented for consideration.

In essence, it was resolved that physicians in state hospitals be placed on a fee basis rather than on salaries. That patients in state hospitals be required to pay for their care, except in such instances where social service investigation proved it impossible.

This brings up the interesting point that all physicians working for salaries, other than in administrative jobs, are actually considered "un-ethical" according to the standards of the AMA. There may be a point here somewhere, perhaps as sharp as Don Quixote's lance.

* * *

MENTAL HYGIENE CLINICS

A paper read by Dr. David Slight emphasized the need for closer liaison with family doctors and even more careful avoidance of interference with private practice. He urged that more patients be referred back to family physicians.

The element of "first aid" in mental hygiene clinics was emphatically stressed. It seemed the consensus that the important thing in a mental hygiene clinic was to get the individual on a "track" as soon as possible. Early and efficient screening was emphasized. The practical advantage of devoting time to many "hopeful" problems, rather than to a few potentially unrewarding cases, was discussed.

He also emphasized providing guidance to workers and agencies who could then more usefully counsel the patients. He felt that many cases of emotional maladjustment could be adequately handled by the personnel of the agencies under the guidance of the psychiatrist.

Another item stressed in this discussion was the necessity for clinics to try to supply social resources: workshops, recreational activities, education and social skills. Patients meeting in groups of approximately 6 for periods of about 2 hours, once or twice weekly, under the supervision of a permissive observer was described and recommended. A Myerian point of view, insofar as mental hygiene clinics are concerned, seemed prevalent.

Dr. Slight expressed the following admonitions to psychiatrists in charge of clinics: "Remember you are a physician. Don't be afraid to prescribe for minor ailments, such as rashes,

colds, etc. Give the family physician a chance to help. Place emphasis on preventive psychiatry, public health and mental hygiene."

Finally, but not least, Dr. Slight emphasized the need to keep clinics in the status of "community clinics" and not county, state or federal.

* * *

The final subject under discussion by the group and in particular by Dr. Kenneth E. Appel, was the status of the Joint Commission on Mental Illness and Health. This is a complex organization which will have the assignment of carrying out the provisions of the Mental Health Study Act of 1955. Thus far, the Commission is in its formative stages of organization.

* * *

CONCLUSIONS AND COMMENTS

Pertinence of the above topics for our state of Arizona is particularly apparent in several instances.

As to the discussion of integration of state hospital and medical community, for instance, it appears that the present Arizona State Hospital administration is making considerable progress in the direction advocated by the discussants at Chicago. It is to be hoped that the medical society will offer continued encouragement to the State Hospital in this trend.

The matter of mental hygiene clinics is a subject of particular interest to our communities. We have, thus far, no mental hygiene clinics other than two, which are confined to child guidance. It is to be hoped that these, as pilot clinics, will adopt some of the practical philosophy as outlined by Dr. Slight so that they can thereby maintain the public's interest and approval and aid in the general promotion of mental hygiene in our community.

For several years our local psychologists, men of responsibility and integrity, have been clamoring for certification. The situation in Arizona was for a time urgent when the practitioners of "dianetics" were rampant. No legislation was enacted because the AMA and the APA were unable to clarify a joint policy. Now that this is being done, it is hoped that our local psychologists will soon be able to set up, through the legislature, standards for certification which will enable them, with the help and cooperation of the medical profession, to uphold the high level of integrity and ethics to which the great majority aspire.

RICHARD E. H. DUISBERG, M. D.

Notes from the EDITORS' PEN

Tobacco Research

The Tobacco Industry Research Committee, comprised of representatives of tobacco manufacturers and associations of growers and warehousemen, formed in 1954 to support independent scientific research into tobacco use and health, passed the \$838,000 mark in research grants approved. Independent scientists at recognized hospitals, laboratories and medical schools throughout the country are the recipients. A fund of \$1,000,000 has been established by the Committee which has pledged more support as the need develops.

Louis J. Regan, M.D., LL.B. (Deceased)

Doctor Louis J. Regan, 63, a Past-President of the Los Angeles County Medical Association and for many years its legal counsel, died December 3rd at Santa Monica Hospital. He was admitted to the hospital suffering from a heart condition and died ten days later.

Many Arizona physicians will recall Doctor Regan and his factual down-to-earth analysis of medical malpractice. He has served medicine well, and we can ill afford to lose men of his stature.

AMA Meetings

To those of you who may be planning attendance to one or more of the national meetings of the American Medical Association, here is the schedule.

| | Annual Session | Clinical Session |
|----------------|------------------------------|----------------------------|
| 1956 (6/11-15) | Chicago, Illinois (11/27-30) | Seattle, Washington |
| 1957 (6/3-7) | New York, New York | Philadelphia, Pennsylvania |
| 1959 | San Francisco, California | Minneapolis, Minnesota |
| 1958 | Atlantic City, New Jersey | To be announced |
| 1960 | Chicago, Illinois | To be announced |

Social Security Act

Much will be said in the weeks ahead regarding H. R. 7225, amendments to the Social Security Act. AMA wants a thorough non-partisan study of the entire program before extending benefits. It is heartening to observe that this wisdom is taking root and being recognized by others. Recently the Baltimore News-Post in an Editorial concluded: "Social Security, as originally envisioned, is a great humanitarian advance. But citizens, for their own protection, should let their delegations in Congress know that they do not want its future imperiled to serve short-term political ends."

Thought-Provoking Words

AMA President-Elect Dwight H. Murray, speaking before the Eighth National Medical Public Relations Conference in Boston had this to say:

"We should work even harder than before to further improve our relationship with the press. We should learn to tell our story in such a way that it is always newsworthy.

"I think that the key to the way people outside the medical profession regard us is the manner in which we regard them —

"No one is going to give one hoot about the problems of the medical profession if we sit on our pedestals waiting for others to come to us.

"Our training may have bread in us the habit of individual responsibility, but we are not the only persons with such training. There are millions of other individuals in this country who are just as interested in the promulgation of our free enterprise system as we are. Many of them feel even more strongly about the threat of socialism than we do. Whatever political battles the political profession may have won in the past were not won by the physicians alone. Victory was achieved only through the support of millions of other voters.

"We talk much about how good medical public relationship begins in each doctor's office. Unfortunately, that's where most of it also ends. Outside of his office, many a doctor shields himself from contact with other citizens like a cloistered nun. He uses his wife and children as a buffer between himself and his neighbors.

"Is it any wonder, then, that we get the feeling so often that nobody understands us and our problems? How can they? We never give other people a chance to know us. Do we understand our neighbors and the rest of the citizens of our respective communities? Hardly. We know their "appendicies and their kidneys and their livers and their tonsils, but we don't know what makes them tick as fellow human beings who live and eat and work and play just as we do. If we would but stop and look around we would learn that we have many things in common with our neighbors, and they would be very willing to help us with our problems if we would help them with theirs."

It appears AMA will continue to be in good hands in the New Year.

AUTHORITATIVE EXCERPTS FROM
LEADING MEDICAL JOURNALS

Syringe Transmission of Infectious
Hepatitis-Cases increases from 94 to 708.

"ARIZONA STATE DEPT. OF HEALTH, 1954"

* * *

Syringes, needles and any other instruments used for the penetration of the skin should be sterilized individually, preferably by heat. . . . Sterilization in an oven or preferably by **autoclaving** must be done between every use of these instruments. . . . From Jour. Amr. Med. Assn. Vol. 145, Jan.-Apr., 1951.

Complete bacteriological sterility can be achieved only by sterilization in the autoclave or hot air oven. From Brit. Med. Research Council, War Memorandum No. 15.

The respective resistances to heat of the viruses of serum hepatitis and of poliomyelitis are not too dissimilar. From Pediatrics Vo. 7, February, 1951.

The safest method of sterilizing syringes and needles used for injections is either dry-sterilizing in the hot air oven for two hours at 160°C. (320°F.) or autoclaving at a temperature of 120°C. (15 to 20 lb. pressure) for 20 minutes. **BOILING IN WATER CANNOT BE RELIED ON TO DESTROY SPORES. The hot oil method is not recommended.** From Brit. Dental Journ. Vol. 92, April, 1952.

The significance of adequate sterilization is obvious. This can be accomplished **only by dry heat sterilization or autoclaving.** From New Eng. Jour. Med., July, 1948.

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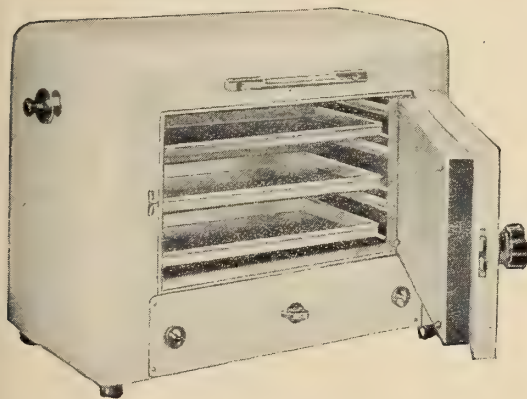
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Organization PAGE

CIVICS

Norman Ross, M.D.

MARICOPA HEART ASSOCIATION

P. O. Box 2688, Phoenix, Arizona

ARIZONA now has a DIAGNOSTIC HEART CENTER which is doing cardiac catheterization studies. The Maricopa County Chapter of the American Heart Association has furnished most of the basic equipment for the St. Luke's Diagnostic Center and it is their goal to further equip this unit to the point of maximum need.

St. Luke's Hospital which is specializing in cardio-respiratory diseases has provided space for the unit and in the near future will build another new building to better house this diagnostic center.

The Professional Staff of St. Luke's Hospital has formed, from its members, two complete catheterization teams, which have been working hard for months to crystallize the many facets necessary for such a service. At present the case load is greatly limited, but it is expected that within a few months they will be able to service the needs of Arizona.

Capable cardio-vascular surgeons are in this area and hence in the near future it will no longer be necessary to send cardio-vascular surgery out of the state.

This is a great step forward for the Medical Profession in this state and for the needs of the people of Arizona.

* * *

THE SALVATION ARMY

Captain Victor Newbould, Public Relations

URGENT!!!

In 54 communities and from 20 disaster centers Salvation Army workers are serving victims of the disastrous flood in Northern California and Nevada, reports Major Henry Koerner, Border Divisional Salvation Army leader. In cooperation with Civil Defense and other relief agencies, The Salvation Army is clothing and feeding thousands of individuals as well as providing emergency housing for thousands more. The full resources of The Salvation Army national disaster bureau have been thrown into

the area. The Salvation Army Children's Home in the Russian River area, at Lytton, has been thrown open to refugees with hundreds being crowded into dormitories, gymnasiums and dining halls.

Mobile canteens manned by Salvation Army volunteer workers are touring the levees surrounding the inundated areas where workers have been on duty without so much as time for sleep or meals for long periods of time.

Two hundred trained officers are on round-the-clock duty in Northern California directing thousands of volunteers in the work of alleviating human suffering. Centers now serving include Eureka, Reno, Sacramento, Salinas, Watsonville, Santa Cruz, Stockton, Crescent City, Grass Valley and the Yuba City-Marysville area. Tons of clothing and supplies have been forwarded from Salvation Army units throughout the West.

Great need exists and The Salvation Army is fulfilling its traditional role of "meeting needs — at the point of need — at the time of need."

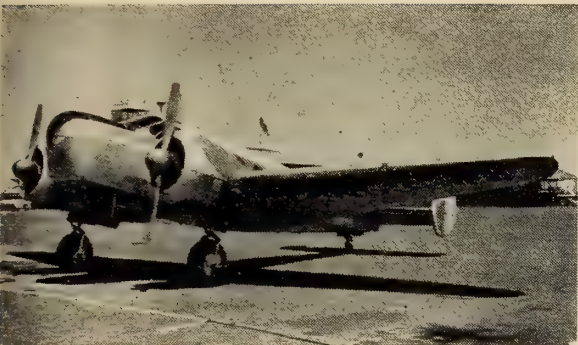
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NATIONAL FUND for MEDICAL EDUCATION
2 West 46th Street, New York 36, New York

The \$3½ to \$4 million it is estimated will be made available to the 42 privately supported medical schools as a result of the \$90 million endowment gift of the Ford Foundation, was hailed by the National Fund for Medical Education as clear recognition of the medical schools' role as a vital national resource.

The fact that the Ford endowments are specifically aimed "to help strengthen instruction" underlines the need made clear by the National Fund over the past five years — namely, that medical education in America has been critically threatened with stagnation, if not retrogression, in the most important phase of producing doctor personnel for the nation, the quality of their teaching programs.

Since most of the schools have faced this dilemma for a decade or more, the Ford endowment income will serve immediately as a fiscal "shot in the arm" to stem that threat. Providing



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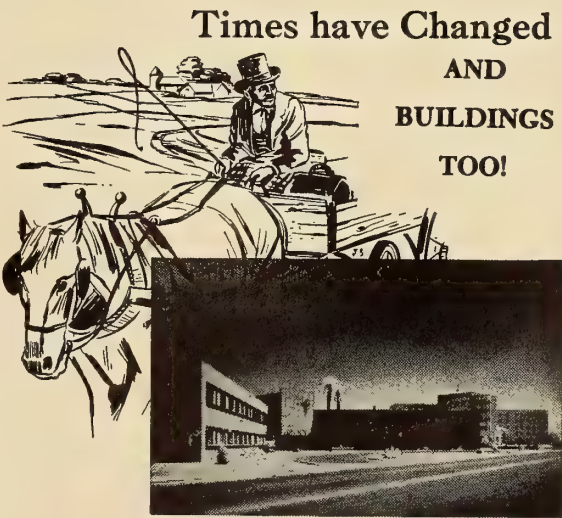
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the 42 schools an average of \$85,000 a year will give them a chance to catch up on their teaching programs. The additional annual income being raised in increasing amounts by the National Fund will then be especially realistic in permitting these schools to maintain teaching quality and go ahead in step with the breath-taking advances in medical history.

This grant of \$90 million should serve as an inspiration to the American public, the medical profession and business to expand its support of the 81 medical schools and thus assure that America will maintain its position of world leadership in the field of medicine. Only by keeping our medical schools financially sound can they keep abreast of the rapid advances constantly being made in the medical sciences.

The National Fund for Medical Education is a non-profit corporation chartered by Congress to seek annual private support for all the nation's medical schools. It was formed under the leadership of President Dwight D. Eisenhower, then President of Columbia University; former President Herbert Hoover, who is Honorary Chairman of the Fund's Board of Trustees; Dr. James B. Conant, former President of Harvard University, now U. S. Ambassador to West Germany, and other educators, University Presidents and business leaders who recognized the dangers to national welfare in the medical school crisis. S. Sloan Colt, President Bankers Trust Company, New York City, is President of the Fund.

In the brief period since organization of the Fund, nearly \$9 million has been raised from industry, the medical profession foundations and individuals.

* * *

HEALTH INSURANCE COUNCIL

James R. Williams, Vice Chairman
208 South La Salle Street, Chicago 4, Illinois

We have one copy of the final report of the Health Insurance Council on the extent of voluntary health insurance in the United States as of December 31, 1954. State figures are shown for the various forms of health insurance coverage.

As with the preliminary report issued in August, figures include persons covered by insurance companies, Blue Cross-Blue Shield and variously organized independent plans.

You may contact the above for your copy.

* * *

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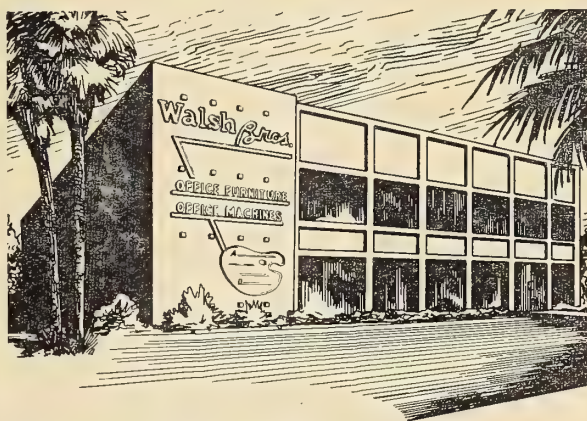
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Executives of Medical & Dental Finance Bureau are Geo. E. Richardson, Pres.; M. D. Gray, Vice-President; and Harris Vowles, Office Mgr., Phoenix.

NEWS ITEM

Medical Financing Service Celebrates Twentieth Anniversary

FRIENDS of the Arizona Medical and Dental Finance Bureau will want to join us in congratulating them on the twenty years of service they have provided to the doctors and dentists of Arizona and to their patients. The company was organized in 1936 by George E. Richardson who is now president, for the purpose of financing medical and hospital bills and enabling people to obtain necessary medical care immediately instead of waiting until they had enough money saved to pay all their bills. The Bureau's proposed method of operation was outlined to the Maricopa County Medical Society and the Maricop County Dental Society at the very beginning and the organization now provides a means by which the patient's account is paid in full to the doctor or hospital after a small service fee is deducted, and the patient is allowed to pay off his obligation in convenient regular payments. The services of the company in this respect are confined to physicians, dentists, hospitals and mortuaries.

The Bureau is an active member of the National Association of Medical and Dental Finance Bureaus and its president has served on the National Board of Trustees for several years.

The Bureau is particularly proud that it has never been involved in a malpractice suit on any accounts financed for its client doctors and we sincerely hope that this is a record which will continue to be maintained.

Private enterprise of this sort no doubt provides its part of the answer to socialized medicine and so long as it is carefully and ethically run, deserves the support and commendation of the doctors and dentists whom it serves.

Approved by Arizona Medicine Journal Publishing Committee.

ANNOUNCEMENT OF THE VAN METER PRIZE AWARD

THE American Goiter Association again offers the Van Meter Prize Award of \$300.00 and two honorable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. The award will be made at the annual meeting of the Association which will be held at the Drake Hotel, Chicago, Illinois, May 3, 4 and 5, 1956, providing essays of sufficient merit are presented in competition.

The competing essays may cover either clinical or research investigations, should not exceed 3,000 words in length and must be presented in English. Duplicate typewritten copies, double spaced should be sent to the Secretary, Dr. John C. McClintock, 149½ Washington Avenue, Albany, New York. The committee who will review the manuscripts is composed of men well qualified to judge the merits of the competing essays.

A place will be reserved on the program of the annual meeting for the presentation of the winning essay by the author if it is possible for him to attend. The essay will be published in the annual proceedings of the Association.

John C. McClintock, M.D.
Secretary.



Woman's AUXILIARY

Y **WOULD YOU BELIEVE IT?**
YES, WOULD you believe it, "Today's Health" has gone around the world on \$40.00.

In 1954 Arizona was awarded the 1st prize of \$40.00 in National competition, which was used to send gift subscriptions to missionaries of all denominations all over the world, especially to those in communist dominated countries. Each county auxiliary was asked to give the names of missionaries, friends or friends of their churches in their own community. The response was gratifying with more names than the \$40.00 would cover. Some local auxiliaries sent gift subscriptions from their own group.

These were new fields to explore: not only in spreading the work and word of medicine, but public relations as well. We at home have so much to read, to see on television and hear on the radio, we cannot realize how starved our missionary friends are for just one magazine. Those who are so far from home often times feel that we at home have forgotten them. So, it is my good fortune to have several letters from these friends from which I will quote, to tell you how they appreciate our kindness and thoughtfulness.

From Ping Tung, Taiwan, this word: "Thank you for your thoughtfulness. Our Laboratory technician, who is a Chinese Doctor was so anxious to read them (Today's Health) because he finds the English easier to understand than the regular medical journals," so when I finish with them I pass them on to others who are interested. It is nice to have one medical magazine coming to keep up to date a little at least." From Karhogo, Cote d'Ivoire, comes word from a missionary wife. "We really do appreciate having Today's Health come to us. We think it is an excellent magazine and very informative; we pass it around to everyone on our station and we all find it very helpful." This same woman went on to tell of some of their problems, noting particularly the frequency of dysentery, not only among the natives but the mission people as well, all this without a Doctor or Nurse.

Other letters from India, Japan and Korea, expressed thanks for the timely material contained in the magazine, saying it was passed

from hand to hand until worn out. Those who cannot read English look at the pictures and come to regard us as friends.

We do not have the \$40.00 this year to continue this friendship across the seas. I have asked each county to continue this project; also some of the churches have expressed the desire to continue. May some of you who read this find it in your hearts to send a gift to a friend who is far from home!

Mrs. James Soderstrom
"Today's Health" Chairman

YOUR PLACE IN THE SALK VACCINE PROGRAM

I **INQUIRIES** received by us indicate that there is still some confusion over how the private physician fits into the federal-state Salk vaccine inoculation programs. U.S. Public Health Service has cleared up one question for us by explaining that the private physician may be paid for vaccinations out of U.S. grants for administrative costs when he performs the service as "an employee or agent of a public agency . . . Thus payments are authorized even though the in carrying out a public vaccination program." public clinic may be conducted in a physician's office, rather than in a school, town hall or other community building. In this case the physician is regarded as an "agent" of the public body sponsoring the campaign, and he may be paid on a per diem or a fee basis.

ANSWERS TO "WHAT IS YOUR SCORE" ON PAGE 70

- I. (A) All; (B) Immediately; (C) The Arizona State Department of Health; (D) The physician; (E) Notify the health authority; (F) True.
- II. (A) Be required by law to take a standard serologic test for syphilis. (B) Treat or make an effort to treat the patient before the fifth month of gestation. (C) Whether or not a blood test was made and the approximate date the specimen was taken. (D) True.
- III. (A) Put into strict quarantine. (B) All of them. (C) Be guilty of a felony and be imprisoned.

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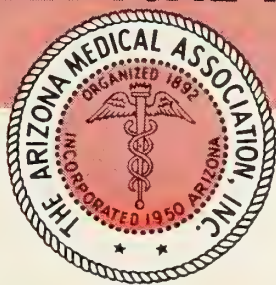


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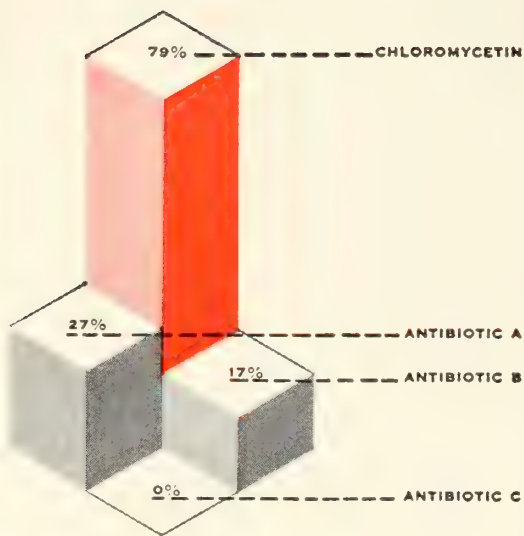
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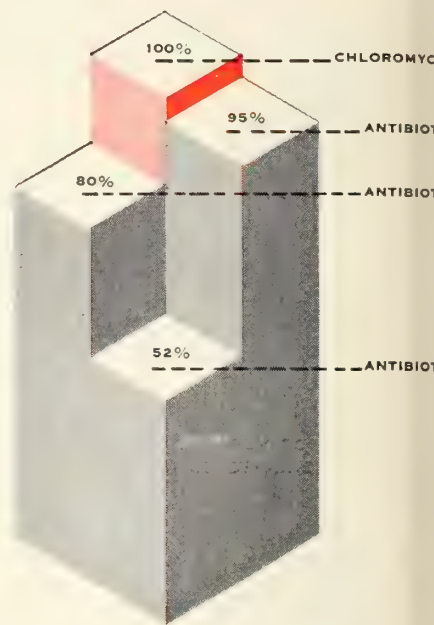
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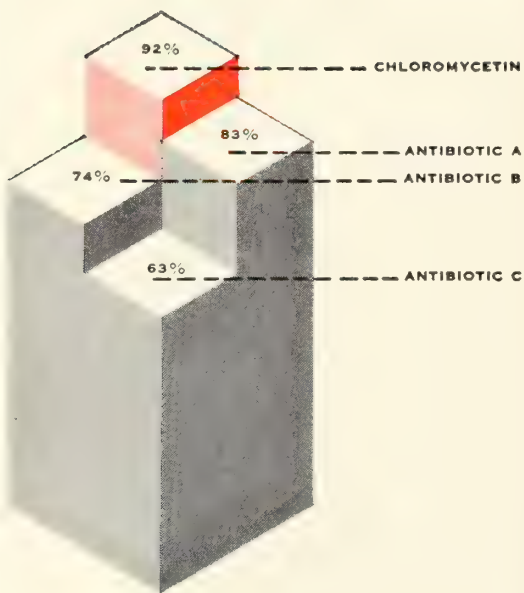
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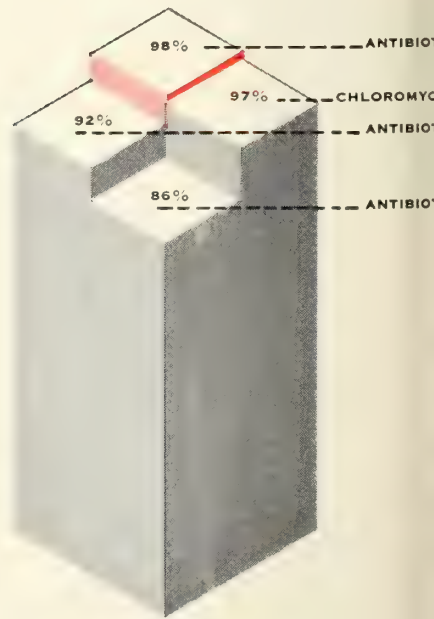
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ARIZONA MEDICINE

Journal of ARIZONA MEDICAL ASSOCIATION

VOL. 13, NO. 3



MARCH, 1956

TABLE OF CONTENTS

OFFICERS

| | |
|--|-----|
| ARIZONA MEDICAL ASSOCIATION, INC., DIRECTORY | 6A |
| WOMAN'S AUXILIARY DIRECTORY | 6A |
| ADVERTISERS DIRECTORY | 37A |

ORIGINAL ARTICLES

| | |
|---|----|
| PRESENT STATUS OF TRACHEOTOMY | 83 |
| Walter P. Work, M.D., San Francisco, California | |
| TRUE RENAL GLYCOSURIA | 88 |
| Daniel H. Goodman, M.D., Phoenix, Arizona | |
| STUTTERING | 91 |
| Robert N. Plummer, Ph.D., Phoenix, Arizona | |

MEDICAL PROBLEMS

| | |
|-------------------------------------|----|
| PHOENIX CLINICAL CLUB | 93 |
| Roger White, M.D., Phoenix, Arizona | |

THE PRESIDENT'S PAGE

| | |
|---|-----|
| PROBLEMS OF THE DOCTORS OF ARIZONA | 106 |
| Harry E. Thompson, M.D., President, Arizona Medical Association | |

EDITORIAL

| | |
|-------------------------------|-----|
| DANGER AT THE SOURCE | 107 |
| AUSTRIAN DOCTORS STRIKE | 107 |
| LETTER TO THE EDITOR | 109 |

TOPICS OF CURRENT MEDICAL INTEREST

| | |
|--|-----|
| RX., DX., AND DRS. | 110 |
| Guillermo Osler, M. D. | |
| ARIZONA PHARMACEUTICAL PAGE — What's In A Name? | 114 |
| Joseph A. Zapotocky, Ph.D., Tucson, Arizona | |
| NOTES FROM THE EDITORS PEN | 116 |
| MEETING NOTICES | 104 |
| ORGANIZATION PAGE — Civics | 118 |
| Norman Ross, M.D. | |
| BOOK REVIEW — Physician's Federal Income Tax Guide | 120 |

WOMAN'S AUXILIARY

| | |
|---------------------------------|-----|
| COME TO THE CONVENTION | 123 |
| Mrs. R. Hewitt, Tucson, Arizona | |

DIRECTORY

| | |
|----------------------------|-----|
| LABORATORIES | 33A |
| DRUGGISTS DIRECTORY | 35A |
| SANATORIUM DIRECTORY | 38A |
| PHYSICIANS DIRECTORY | 41A |

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ARIZONA MEDICINE

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MARCH, 1956

Original ARTICLES

PRESENT STATUS OF TRACHEOTOMY

Walter P. Work, M. D.
San Francisco, California

Introduction:

THE performance of tracheotomies has become commonplace in recent years. In fact, one can readily name over fifty different medical and surgical conditions for which the operation is now recommended. For decades tracheotomy has been performed in patients who have shown high respiratory tract obstruction and this operation was recognized as the only satisfactory means of establishing an airway. In spite of this absolute indication, the operation has been considered dangerous and fraught with hazards and was advocated in many instances only as a lifesaving measure. When one considers that tracheotomy was usually performed in desperately ill patients and often done hastily and without proper illumination and suction, one understands why the operation was regarded in this light. There is rarely a physician, whether a general practitioner or specialist, who at one time or another in his medical career will not encounter a patient who needs this operation. The recognition of the fact that accumulation of secretions in the lower respiratory tract causes obstruction to pulmonary ventilation which leads to primary lung pathology and secondary asphyxial changes within the body constitutes the main factors responsible for the changing concepts of tracheotomy. The medical literature in recent years abounds with reports of the successful use of tracheotomy and it is to those authors¹⁻²⁵ that the undersigned gives

full credit and acknowledgment not only for the help rendered in the treatment of patients but also in the preparation of this manuscript.

It is the purpose of this discussion to point out the rationale for the widespread use of tracheotomy and to enumerate some of the routine procedures used in the performance of the operation, to emphasize salient complications and finally to outline the postoperative care recommended for these patients.

Indications for tracheotomy:

The indications for tracheotomy in high respiratory tract obstruction are usually well defined in the child or adult. This is particularly true if the patient is seen when the classical signs are present. Tracheotomy is usually performed in these cases without hesitation. However, if patients with acute high respiratory tract obstruction are seen relatively late, they may present signs of exhaustion and partial asphyxiation. In such patients although tracheotomy should be performed immediately, it is often unduly delayed because the signs of exhaustion and asphyxiation may be misleading.

Local pathological changes within the lungs are brought about by a patient's inability to cough secretions from the lower respiratory tract. It is estimated that the normal individual swallows between 1000 to 1200 cc. of mucus and saliva during a twenty-four hour period. In addition the cilia of the tracheobronchial tree propels secretions along the trachea until they are normally expelled to the pharynx by coughing. If these normal mechanisms are inter-

*Read before Arizona State Medical Association, Annual Meeting, May, 1955.

fered with by disease, new growth, trauma, etc., the patient will undoubtedly slowly but surely drown in his own secretions from asphyxiation. Not only may the patient aspirate saliva from the pharynx but vomitus is frequently aspirated as well. Filling of the alveolar spaces, bronchioles and bronchi with thick viscid secretions tends to interfere with pulmonary ventilation and gas exchange across the alveolar membranes. The patient's vital capacity will fall if the secretions are sufficient and if the accessory mechanisms of respiration are interfered with such as occurs in crushing injuries of the chest. Provided the patient has the strength to continue to live, other local pathological changes can occur in the lungs such as atelectasis, pneumonia, abscess, cavitation and fibrosis.

In addition to the local changes that occur within the lungs, widespread changes occur within the body and these changes will be considered now. Since the accumulation of secretions within the tracheobronchial tree and alveoli prevent exchange of oxygen across the alveolar membrane, anoxemia develops. If anoxemia develops rapidly, there is rapid loss of consciousness. A good example of this is noted when an aviator ascends too rapidly. Actually in this instance the supply of oxygen in the inspired air is diminished. When secretions accumulate within the lungs, there is a reduction in transference of available oxygen to the arterial blood. Lack of oxygen in the arterial blood, if not too great, may lead to an increased rate of breathing and increased pulmonary ventilation in an attempt for the body to compensate for this lack. However, if anoxemia is allowed to go unchecked, there is increased capillary permeability associated with irreparable damage in the central nervous system, heart muscle and other organs, and pulmonary edema.

Concomitantly with anoxemia, hypercapnia develops. The exchange of carbon dioxide across the alveolar membrane is regulated principally by the partial pressure gradients of the venous carbon dioxide and the alveolar carbon dioxide. Normally, this transference goes on rapidly and successfully because of the gradient of the two gases between the blood and the alveolar spaces. However, when secretions within the lungs interfere with this gradient, carbon dioxide is not transferred and accumulates in the arterial blood. Excess of arterial carbon dioxide

is a powerful stimulator of the breathing mechanism via the respiratory centers. In contrast to oxygen lack, increased accumulation of carbon dioxide in the blood leads to headaches, restlessness, confusion, apprehension, narcosis, and to marked respiratory depression, even to failure of the respiratory centers and circulatory collapse.

As respiratory anoxemia and hypercapnia progress, respiratory acidemia also develops. When the hydrogen ion concentration of the blood tends to rise, as it does in asphyxia, pulmonary ventilation is increased in an attempt to eliminate excess carbon dioxide from the blood. Alveolar carbon dioxide tension regulates the amount of carbonic acid in the arterial blood, so if the alveolar carbon dioxide tension is shifted above 40 mm. of mercury, this increase of tension is reflected directly in the arterial blood as carbonic acid both in the free and the combined forms. This accumulation tends to shift pH of the blood towards the acid side. In order to combat this shift of blood pH, pulmonary ventilation is increased and the kidneys conserve the bicarbonate ion.

In summation, it may be stated that lower respiratory tract obstruction from secretions which cannot be coughed out by an ill patient leads first to local changes within the lungs, and to secondary widespread body changes from respiratory asphyxia. Excessive secretions within the lungs influence the exchange of oxygen and carbon dioxide across the alveolar membranes. The central nervous system cannot withstand the lack of oxygen for long periods of time without irreparable damage. This also applies to nervous tissues in general, to the heart muscle, the kidneys, the liver, and other body organs. The body tends to reverse these changes by increasing the rate and depth of respirations. However, if this cannot be done and asphyxia continues, there is a depression of the respiratory center which in turn decreases the respiratory efforts and pulmonary ventilation, which results in further lack of oxygen, accumulation of carbon dioxide, and shift of the hydrogen ion concentration.

In addition to these effects already noted, the increased efforts of the patient to breathe against lower respiratory tract obstruction causes increased intrathoracic venous pressure which in turn is reflected as increased intracranial venous pressure. Increased intracerebral

venous pressure slows circulation which increases the carbon dioxide content of the blood, shifts the hydrogen ion concentration, and produces further lack of oxygen. These changes tend to produce increased capillary permeability, exudation of fluid, increased intracranial pressure, cerebral edema, and further depression.

Thus in the process of asphyxiation, there are many changes occurring in the body that tend to prevent the adequate supply of oxygen to the tissues. On the other hand, the body is attempting to make compensations to combat these changes and if the respiratory obstruction is relieved early, these changes are entirely reversible. If the obstruction is not relieved, all phases of respiratory compensation mechanisms will be overshadowed and asphyxiation and death will supervene. Tracheotomy should be performed early to prevent asphyxia or to combat it if it has developed. Unfortunately, there are no satisfactory laboratory tests to aid the clinician in determining exactly when tracheotomy should be done in a patient, so the clinician must rely on his experience and judgment. A safe rule to follow is to perform a tracheotomy when it can reasonably be predicted that some time during the course of the patient's illness, lower respiratory tract obstruction will develop. Tracheotomies should be performed in other patients who already have developed the inability to cough secretions out of the lower respiratory tract and who are unable to swallow their own secretions.

It is not within the realm of this paper to list all of the diseases that require tracheotomy, but rather to point out some of the diseases in which tracheotomy has been efficacious in preventing asphyxia.

Patients with bulbar or spinal poliomyelitis, or a combination of the two, may require tracheotomy. The tracheotomy should be done early in the course of the disease and frequently on a prophylactic basis. This dictum applies to a patient whether in need of respirator care or not. If a patient with poliomyelitis shows progressing paralysis which prevent the swallowing of secretions and the coughing of secretions from the chest, then tracheotomy should be performed early. Only rarely can conservative methods be relied on for the continued mechanical removal of secretions in these progressively ill patients. Lowering of vital capacity in a patient with poliomyelitis is also an added

indication for tracheotomy. The body changes from asphyxia may be the cause of death rather than the virus infection in these patients.

Comatose patients may require tracheotomy, and often this procedure may be lifesaving in itself. This statement applies to patients who are in a coma from any cause over long periods of time. Thus patients showing barbiturate poisoning, eclampsia, tetanus, botulism, head injury, brain tumor, brain abscess, cerebrovascular accidents, and others fall in this category. The lower respiratory tract in these patients must be protected at all costs and tracheotomy appears to be the procedure of choice.

Patients with traumatic injuries about the face, jaws and neck may have sufficient upper and lower respiratory tract obstruction to require tracheotomy.

Tracheotomy has been used successfully in patients with crushing injuries of the chest to help clear the tracheobronchial tree of secretions and blood. In these patients tracheotomy further helps to alleviate pain, lessen mediastinal flutter, and reduce paradoxical motions of the thoracic walls. Performance of tracheotomy is not contraindicated even in those patients with pneumothorax, pythorax, or hemothorax.

Tracheotomy may be a lifesaving measure in patients who have undergone thyroid surgery and show the complications of recurrent laryngeal nerve paralysis or postoperative bleeding.

Patients with inhalation burns of the tracheobronchial tree may have enough edema of the mucosa to require tracheotomy; as do some patients with chemical burns in the same region.

It is a common practice in major surgical operations of the head and neck to perform tracheotomies prophylactically, not only to alleviate impending high respiratory tract obstruction, but to aid in clearing the lower respiratory tract of secretions.

Operative techniques:

Conservative methods directed at removing secretions from the pharynx and lower respiratory tract should not be used for long periods of time and should definitely not be used to the point of causing excessive trauma to the larynx, hypopharynx, trachea, and bronchi.

When possible, a patent airway should be maintained by a bronchoscope or endotracheal tube during the performance of the operation since this often prevents serious complications.

During tracheotomy some patients are able to maintain sufficient airway, while others may have to have breathing continued by mechanical means during the operation. This is done through an endotracheal tube by the anesthetist. These patients may require an extremely high percentage of oxygen insufflation during the procedure.

When possible, local anesthesia is agent of choice. However, in children and in some adults, inhalation anesthetics such as cyclopropane, ethylene, or nitrous oxygen are used.

If an emergency tracheotomy must be performed, it can often be done satisfactorily by opening the trachea directly through the neck tissues. If this is not feasible, then opening of the cricothyroid membrane should be done to save the patient's life. Later when the patient's condition permits, the tracheostomy opening should be moved to the area of the 2nd and 3rd tracheal rings.

The horizontal incision has had many advocates in recent years, although the vertical incision perhaps would serve the novice better. The isthmus of the thyroid gland as a rule must be clamped, cut, and ligated; in other instances it may be pushed either upwards or downwards. Prior to entering the trachea, all bleeding is controlled and frequently in an adult 2 cc. of 5% cocaine hydrochloride solution is injected directly into the tracheal lumen to help abolish cough reflexes. In an adult, a window is cut out of the cartilage of the 3rd tracheal ring thus creating an opening into the trachea slightly smaller than the tracheotomy tube to be inserted. In infants and children, however, a vertical incision is made in the 2nd and 3rd tracheal rings and no cartilage is removed. In the course of the operation, care is taken not to open the tissues of the neck widely so as to protect the superior mediastinum from emphysema and infection. Tracheal and bronchial secretions are removed by suction and during this maneuver coughing is produced even in an anesthetized or comatose patient. During the coughing, the wound is inspected for spontaneous hemorrhage. An appropriate sized tracheotomy tube is inserted into the trachea and the tube is held securely in place by tying cloth tapes about the neck. The wound is not sutured and may be packed lightly with gauze if desired.

Patients who require respirator care and who

need a tracheotomy are intubated, removed from the respirator and the operation is performed while forced respirations are being carried out by the anesthetist. After the tracheotomy tube is inserted into the trachea, forced respirations are continued manually through the tracheotomy tube until the patient can be returned to the respirator.

Complications:

During the performance of tracheotomy, hemorrhage may be difficult to control, particularly if an emergency tracheotomy is being done. In this latter circumstance, it is better to attempt to control the hemorrhage after the tracheotomy tube has been inserted into the trachea. During tracheotomy if the patient struggles or fights for air against a closed airway and the tissues of the neck are open, the patient may develop mediastinal emphysema and uni- or bilateral spontaneous pneumothoraces. This complication can be avoided if the patient's airway is kept patent during the operative procedure. In general, the 1st tracheal ring is not disturbed during tracheotomy unless the patient is to have a laryngectomy following tracheotomy, and then it is permissible to use the 1st tracheal ring as a site for tracheostomy.

In young infants and children, the pleural domes may expand into the tracheotomy wound and cover the trachea and must be pushed aside to avoid rupture of the parietal pleura.

Probably the most frequent complication following tracheotomy is subcutaneous and mediastinal emphysema. Subcutaneous emphysema can be extensive and may involve the subcutaneous tissues of the entire body. Pneumothorax may develop unilaterally or bilaterally and if it is the simple type it can be treated by aspiration of air from the pleural spaces. However, if tension pneumothorax develops, underwater drainage has to be instituted in order to re-expand the affected lung. Secondary hemorrhage in the tracheotomy wound can be serious, particularly if the blood tends to gravitate into the tracheobronchial tree. An improperly fitted tracheotomy tube may cause ulceration of the trachea even to the point of rupturing a large blood vessel.

Expulsion of the cannula from the trachea by coughing soon after completion of tracheotomy can cause death if not re-inserted into the trachea promptly. Tracheotomies jeopardizing the integrity of the cricoid and thyroid

cartilages may cause later stenosis.

When a patient is ready to be decannulized, the wound should not be primarily sutured, and if it is done ill-advisedly can lead to subcutaneous emphysema, mediastinal emphysema, and pneumothorax. This statement does not apply to fistulae that develop at the site of the tracheotomy wound after enough time has elapsed for the mediastinal tissues to be sealed off. In this instance, closure of the fistulae can be done safely and satisfactorily. In fact, some fistulae can be closed by the endoscopic removal of granulation tissue from the trachea.

Aftercare of the tracheotomy patient:

The recently tracheotomized patient should not be returned to the ward unless there are trained personnel to carry on the postoperative care. Nurses are instructed to change and cleanse the inner tracheotomy tube each hour without disturbing the outer tube. The nursing staff suctions the patient's cannula only to the depth of the tracheotomy tube and is further instructed not to suction the trachea unless an emergency arises. The doctors in charge of the patient are expected to keep the tracheobronchial tree free of secretions by suction, forced coughing, postural drainage, irrigations, etc. Moisture in the form of cold vapor is usually supplied and is supplemented by a wetting agent when indicated. The vapor and wetting agent can often be supplied by oxygen in a tent or croupette. The outer tracheal cannula is not changed until the 3rd postoperative day. Nourishment of the patient is supplied either orally or parenterally. Specific antimicrobial therapy is given. Finally, a complete set of tracheotomy instruments is kept at the patient's bedside.

Summary:

The increasing indications for tracheotomy have been pointed out. Teamwork between members of the medical and nursing staffs is essential. Indications for tracheotomy are usually clean-cut in high respiratory tract obstruction, whereas the indications for tracheotomy in lower respiratory tract obstruction are less well defined. In the performance of a trache-

otomy there are greater advantages and fewer complications in the planned, orderly procedure as contrasted with the emergency operation.

Conclusion:

Early or even prophylactic tracheotomy should be recommended in selected patients who are unable to cough secretions from the lungs, in order to avoid local pathological pulmonary changes and secondary physiopathological changes within the body thereby reducing the effects of respiratory asphyxia as an added factor complicating the primary disease.

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TRUE RENAL GLYCOSURIA

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TRUE renal glycosuria is a benign condition characterized by the presence of glucose in the urine at all times, even in the fasting state, and at all levels of blood sugar. It is a rare condition. It is important to differentiate true renal glycosuria from diabetes mellitus for the treatment is entirely different. In true renal glycosuria, insulin is contraindicated and adequate carbohydrate intake must be furnished.

The criteria¹⁻¹³ for the diagnosis of true renal glycosuria are as follows: (a) A fasting blood sugar within normal limits or lower than normal; (b) glucose tolerance curve is normal or flat; (c) glucose is present in every specimen, whether voided in the fasting state or after a meal; (d) carbohydrate utilization and fat metabolism are normal.

True renal glycosuria, because it is rare and frequently confused with diabetes mellitus and with other forms of non-diabetic glycosuric meliturias, is worthy of emphasis. The following presentation illustrates a classical case of true renal glycosuria:

The patient, a 19-year-old white female, was seen in consultation because of suspected diabetes mellitus. A glycosuria was noted on admission to the hospital for an appendectomy.

The past history was non-contributory. No history suggestive of diabetes in any member of the family could be elicited.

Physical examination revealed a well developed, thin, white female who appeared moderately ill. Temperature was 100⁴ orally, pulse 88, respirations 18, blood pressure 116/76, weight 108 pounds, height five feet and five inches.

Laboratory findings revealed the following: Blood count: RBC 4,00,000; WBC 16,800; differential WBC, segs 88%, lymphs 11%, eosinophils 1%; sedimentation rate 18 mm/hr. (Wintrobe); serology negative. Urinalysis: Sugar negative; albumin negative, specific gravity 1.026; microscopic examination, occasional WBC/HPF.

Blood Chemistry — Glucose Tolerance Test

| Time | Blood Sugar | Glycosuria |
|-----------|-------------|------------|
| Fasting | 60 mg. % | 2/-+ |
| Half hour | 90 mg. % | 4/-+ |
| 1 hour | 114 mg. % | 4/-+ |
| 2 hour | 100 mg. % | 4/-+ |
| 3 hour | 92 mg. % | 3/-+ |
| 4 hour | 80 mg. % | 3/-+ |

The glucose tolerance curve is characteristic and typical of true renal glycosuria in that glucose was found at all times in the urine even in fasting state and at all levels of blood sugar. The glucose tolerance curve is relatively flat.

The impression of the attending surgeon was that of acute appendicitis, complicated possibly by diabetes mellitus. Consultation was requested because of the possibility of diabetes mellitus.

The patient had an appendectomy with an uneventful recovery. Her state of hydration and blood glucose level was maintained by adequate parenteral glucose and water administration. An explanation of the condition which resulted in the finding of glucose in the urine was given to the patient. It was emphasized that she did not have diabetes mellitus and needed never to take insulin. She was further cautioned that should she become pregnant, she should be under strict surveillance by her physician who should be apprised of her status of true renal glycosuria in order to avoid dehydration and acidosis.

Discussion

True renal glycosuria is also known as normoglycemic dextrosuria and orthoglycemia glycosuria.³ It has been incorrectly termed renal diabetes and diabetes innocens.⁴ Whether it is a rare or not an uncommon entity is a matter of opinion. It has been found to be a common cause of glycosuria in selectees⁶⁻⁷ in World War II. There is agreement, however, that there is a high familial incidence⁸⁻⁹⁻¹⁵ and that true renal glycosuria is not a forerunner¹⁻²⁻⁴ of diabetes mellitus. It is inherited as a Mendelian dominant.¹⁵ True renal glycosuria is benign and persists throughout life once it develops.¹ The ratio of male to female patients with true renal glycosuria is three to one. It may occur at any period from infancy to old age. The pathology of true renal glycosuria is not known. No autopsy in such case has been reported. However, studies¹⁰ of the pathological physiology in true

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renal glycosuria have shown that the effective renal blood flow and glomerular filtration is normal. There is, however, a diminished tubular reabsorption of glucose in renal glycosuria which is not due to any organic kidney defect. True renal glycosuria is symptomless except during starvation and pregnancy¹¹ when dehydration and acidosis may develop. Such patients will exhibit glucose and ketone bodies in the urine but will have a normal concentration of sugar in the blood, (i.e.) normoglycemic glycosuria. The administration of intravenous glucose and water may be necessary to combat the dehydration and acidosis of pregnancy complicating true renal glycosuria. Patients with true renal glycosuria are usually of normal or subnormal weight in contrast to diabetic patients who are generally obese. Some⁶ recommend that patients with true renal glycosuria who are underweight should have an increased amount of carbohydrate in the diet. Other authorities¹ recommend to eat sparingly of candy, actual sugar, pastries and to avoid dietary excesses in general. If after a three-year period of observation the condition is still benign, increased laxity in regard to diet may be allowed.

The criteria¹ for the diagnosis of true renal glycosuria are as follows: (1) Glycosuria without hyperglycemia. Glucose should be found in every specimen of urine examined whether it be voided in a fasting state or after a meal. (2) Glycosuria should be independent of diet. (3) The level of blood sugar should be influenced only slightly by the ingestion of food. The glucose tolerance curve must be normal. (4) There should be no symptomatology characteristic of diabetes mellitus. (5) The type of sugar found in the urine must be dextrose. (6) There should be no progression toward diabetes mellitus. (7) Normal storage and utilization of carbohydrate as demonstrated by the respiratory quotient and metabolism before and after a carbohydrate meal. Renal glycosuria when defined in this limited sense is rare.¹ Others³ believe that renal glycosuria is proved whenever glycosuria occurs with a normal blood sugar curve, whether the urine contains sugar at the beginning of the test or not. When defined in this sense, it is not uncommon.³⁻⁶⁻⁷⁻¹⁷

It is important not to confuse true renal glycosuria with diabetes mellitus for it may result in refusal of applications for life insurance, in needless carbohydrate restriction and

futile administration of insulin with associated hypoglycemic reactions. An occasional diabetic may have a low renal threshold for glucose.¹² This is purely a coincidence. In such instance tests of the urine for sugar are not satisfactory as a guide for the treatment of diabetes. Frequent determinations of the blood sugar are then necessary. True renal glycosuria must be differentiated not only from diabetes mellitus but from other causes¹³⁻¹⁸ of non-diabetic glycosuric melituria such as: (1) The pseudorenal glycosuria of pregnancy and nephritis, (2) alimentary glycosuria and (3) transient hyperglycemic non-diabetic glycosuria and (4) the non-glucose meliturias.

Pseudorenal glycosuria is not uncommon. It differs from true renal glycosuria in that as the blood glucose level diminished, the glycosuria diminishes and under fasting circumstances completely disappears. There is a temporary lowering of the renal threshold. Glucose may be found in the urine with blood sugars as low as 100 mg. However, when hypoglycemia is induced by insulin, glucose disappears from the urine. The following glucose tolerance test exemplifies this:

| Time | Blood Sugar | Urine |
|-----------|-------------|-------|
| Fasting | 82 mg. | Neg. |
| Half hour | 104 mg. | 2+ |
| 1 hour | 136 mg. | 4+ |
| 2 hour | 80 mg. | Neg. |
| 3 hour | 60 mg. | Neg. |

The glucose tolerance curve is normal; glucose utilization is normal. Pseudorenal glycosuria is a forerunner of diabetes for there is an increased incidence of diabetes developing late in this syndrome.

In about 15% of normal pregnant women there is a lowered threshold for glucose and glycosuria appears. This condition is benign and disappears after parturition. However, it should never be taken for granted that the glycosuria of pregnancy is solely a pseudorenal glycosuria for diabetes may have its inception during pregnancy or pregnancy may occur in a woman who already has diabetes. A pregnant woman with glycosuria should have a thorough investigation to rule out diabetes mellitus and true renal glycosuria. The presence of dehydration, ketonuria, glycosuria and a normoglycosemia indicates true renal glycosuria.

Glycosuria, due to impaired tubular absorption of glucose, is observed also in patients

with nephritis and in the early phase of bichloride nephrosis.

Alimentary glycosuria (oxyhyperglycemia³) is the term applied to the individual who has a normal renal threshold for glucose but will have an abnormal elevation of the blood sugar after ingestion of a meal rich in carbohydrate and will excrete glucose in the urine. A few such individuals with alimentary glycosuria may eventually develop mild diabetes. Alimentary glycosuria is a condition in which the rate of intestinal absorption of glucose exceeds the body's ability to utilize glucose and the capacity to store excess glucose as glycogen. This type is common in quick emptying stomachs and after gastroenterostomy.³

Transient hyperglycemic non-diabetic glycosuria occurs in such "stress" conditions as acute coronary artery occlusion, cerebral hemorrhage, brain injuries.

Pathological Physiology

Glucose is filtered by the glomeruli and reabsorbed by renal tubules, so that the concentration of glucose in the glomerular filtrate is the same as that in plasma.¹⁴ Normally none of this filtered glucose appears in the urine for the cells of the proximal convoluted tubules reabsorb all filtered glucose back into the blood stream. This reabsorption is an enzymatic reaction. However, there is a limit to the quantity of glucose that the cells can handle per minute. At a normal rate of glomerular filtration, the tubules can reabsorb about 324 mg. of glucose per minute. At certain levels of blood glucose some glucose fails to be reabsorbed and appears in the urine. This concentration is known as the renal threshold for glucose. It usually lies between 160 and 190 per 100 cc. but it varies in different persons and even in the same person from time to time. It depends on the rate of glomerular filtration. The renal threshold is not defined by the blood glucose level alone, but reflects a relationship between the total quantity of glucose filtered per unit of time and the tubular capacity to reabsorb glucose.

In a number of persons there is a defect of the tubular mechanism which is responsible for glucose appearing in the urine when the blood glucose concentration is considerably below 160 mg. per 100 cc. These persons will excrete glucose in the urine. This is non-diabetic glycosuric melituria which is defined as an excessive quantity of sugar occurring in the urine in the

absence of underlying diabetes mellitus.

Studies of renal function tests in a pregnant patient¹⁶ with true renal glycosuria revealed that, during pregnancy, fundamental changes in glucose reabsorption with changes in the plasma-glucose levels took place affecting the mechanism of reabsorption of glucose.

It has been postulated¹⁷ that in true renal glycosuria a deficiency of tissue phosphatase may be the abnormality producing interference with the phosphorylation mechanism in the proximal convoluted tubules on which sugar reabsorption depends.

Summary

True renal glycosuria is a benign uncommon condition where glucose is found in the urine at all times even in the fasting state and at all levels of blood sugar. There is a defect in the cells of the proximal convoluted tubules resulting in a diminished capacity of these cells to reabsorb glucose from the glomerular filtrate without any other associated abnormality of excretory function of the kidneys. The recognition of true renal glycosuria is emphasized because it is frequently mistaken for diabetes mellitus and pseudorenal glycosuria. It is not a forerunner of diabetes. It requires no treatment except possibly during pregnancy. A typical case of true renal glycosuria is presented and differentiation from diabetes mellitus and other forms of non-diabetic glycosuric meliturias is discussed.

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STUTTERING

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STUTTERING is a dysrhythmia of speech. It is characterized by prolongation, repetition or blockage of speech sounds, syllables or words. The flow of speech often is interrupted by a laryngeal spasm in which the vocal folds are frozen in an adducted position. Again, the interruption is due to frozen articulators or to their repetition of a sound, syllable or word without the ability to proceed to the next speech unit. Still again, the interruption is due to a failure of control of the process of respiration as required for speech. Often in such a failure the pattern of respiration reverses itself and the stutterer finds himself attempting to speak on inhalation rather than on exhalation.

In addition to these symptoms, the chronic stutterer often has developed facial grimaces and extraneous movements of head, shoulders, arms, legs and the body generally. The most severe example of such was observed in a nine-year old male. With each effort to speak, this boy raised both arms and slapped his thighs, at the same time standing on one foot and swinging the opposite one in a lateral direction. Eventually he would jump sidewise, landing on the previously swinging foot. This jump was the climax, the supreme effort to speak, which strangely enough was usually successful.

There are certain conditions under which the stutterer speaks with relative ease. He has less difficulty when talking to pets, to smaller children and when talking to himself when alone. He speaks with greater ease when reciting memorized material, when singing or when talking in unison with others. Speech comes easier for him when he feels well, when in a happy frame of mind, and the adult stutterer has little or no difficulty when mildly intoxicated.

The stutterer's speech failure increases when talking to superiors, when ill, excited or when ill at ease for any reason. Nearly every stutterer finds it difficult and frightening to talk over the telephone. Some find it more difficult to talk to strangers, while some experience a breakdown when talking to friends and even to their families.

The full-blown stutterer is beset by many psychological anomalies. He is nervous, tense and apprehensive. He is shy and socially with-

drawn. He is extremely sensitive and has a general feeling of abnormalcy and inferiority — intellectually, socially and otherwise. On the physical side, he is found to be hypnotic, his reflexes are hypersensitive and bio-chemical studies have shown that ratios of certain blood chemicals fall outside the normal range. Electroencephalograms taken during stuttering spasms have revealed brain wave patterns quite similar to those of the epileptic during a seizure.

More has been written and said about stuttering than any other speech disorder, and yet there remains the widest divergence of opinion concerning its cause. Theories are numerous, as the following will show.

1. It is viewed as a neurological disorder. Some believe that due to a lack of dominance in one of the cortical hemispheres, there is an antagonism between the two in initiating stimuli to the muscles of speech. As a result, timing of the stimuli may be irregular, resulting in a "humming or hawing" of articulatory action. Or, one hemisphere may send stimuli for one kind of action while the other sends stimuli for action of another kind.

2. It is held to be the result of a conflict between the cortex and the hypothalamus. This theory holds that the inhibiting action of the cortex over the emotional center as required for speech is disrupted. There are a number of theories as to cause of such a conflict:

1. Psychoneuroses
2. Congenital instability of the hypothalamus
3. Fear of the speaking process, due to parents' amateur efforts to correct "natural" stuttering experienced by most children at some point during the early speech development
4. Unknown predisposition — organic and hereditary — with the stutter precipitated by an accident, illness or other physical or mental shock. The latter may be caused by a divorce in the family, the child's starting to school, the father's leaving for military service, unhappy home environment, etc.

3. Others believe that stuttering is caused by a bio-chemical disturbance. Blood studies of stutterers have shown endocrine imbalances involving sugar, potassium, inorganic phosphates, calcium and protein. These imbalances do not go beyond the normal range, but the ratios of the

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involved chemicals are different from those of the non-stutterer.

4. Mild hearing losses are held as a possible cause for a confusion of speech sound discrimination, resulting in a hesitation in the production of words during the speech development period. This confusion and resultant hesitation is perpetuated and fixated as stuttering.

5. Stuttering is said by some to be an oral eroticism, or a perseveration of the suckling movements of infant nursing. These movements are said to be used unconsciously in speech and are symbolic of a desire to retain the security of infancy.

6. The lack of visual, auditory or of kinesthetic imagery is held by some as the cause of stuttering. The respective advocates of these three theories believe that in order to develop and maintain normal speech one must precede the act of speech with imagery of what is to be said. Lacking such imagery, the individual never develops smooth, anticipated expression of ideas but stumbles blindly in his efforts.

7. Some view the disorder as a poor speech habit. They believe that the stumbling, halting and repetitious speech of the infant simply becomes fixated as a habit.

These theories do not completely cover the field of speculation, but they are the most prevalent ones and will suffice to show that there is no general agreement among those in the field as to the cause of this speech malady. Many agree that in any one case any one of many conditions may cause the disorder.

Methods of correction are also numerous. They include hypnosis, psychoanalysis and psychiatry. They include strengthening visual, auditory and kinesthetic imagery. Some advocate the use of negative practice which requires voluntary stuttering, in the belief that if the individual learns to stutter at will he can cease at will. There are those who feel that correction lies in development of a dominance of one cortical hemisphere. Breath control, control of the rate of speaking, bed rest, relaxation exercises and sedation are used by others. It is quite probable that successful treatment of stuttering requires a combination of many of these methods and many agree that they do use such a combination.

Though the percentage has reached ten percent in some studies, I have found in extensive examination of school groups that approximately one percent of the elementary and secondary school population stutter. More stuttering occurs among twins and the left-handed, and male stutterers outnumber female by five to one. Practically all stuttering has its onset prior to school age and a great majority start with the beginning of speech. Most children stutter at some point during the speech development period, and this point appears to be at the time the child's ideas run ahead of his articulatory ability to put these ideas into oral speech. These children cease to stutter when, apparently, articulatory ability overtakes ideation. Some believe that those individuals who do not cease stuttering did not begin doing so because of the gap between articulation and ideation, but started because of predisposing and precipitating factors.

Despite the fact that the cause of stuttering generally has not been agreed upon, and that many methods are used, a redeeming feature is that the disorder can be corrected in most cases. My own method, which involves a number of techniques and activities and which varies as required from case to case, is successful in a great majority of cases, but there are occasional ones which do not respond to any variation of method. At best the process is an arduous and lengthy one. I have found that those six years and under require six months' therapy, while adults, strangely, and those between six and adulthood require nine to twelve months.

The chief problem facing the stutterer is the attitude that he should be left to outgrow the disorder. As a result most stutterers have become chronic before they are brought for treatment. In terms of my experience, it seems wise to give attention to the disorder if it persists, at any age, over a period of twelve months. Such persistence indicates that the individual will not make spontaneous recovery, or that if he does he will be so long in doing so that psychological involvements will occur and probably remain long after stuttering has ceased. The answer to the problem appears to be early consultation and examination and early therapy if permanency of the condition is indicated.

PHOENIX *Clinical* CLUB

The Case History in this discussion is selected from the Case Records of the Massachusetts General Hospital, and reprinted from the New England Journal of Medicine. The discussant under Differential Diagnosis is a member of the staff of the Massachusetts General Hospital. The other discussants are members of the Phoenix Clinical Club.

MASSACHUSETTS GENERAL HOSPITAL

PRESENTATION OF CASE 40051

FIRST ADMISSION. A sixty-year-old retired Greek bakery worker was admitted to the hospital for repair of an inguinal hernia. He had recently felt a sudden pulling sensation in the left lower quadrant after lifting a sack of flour and noted a swelling in the inguinal region.

The past history included an operation for "locked knee" three years previously at another hospital. The patient thought there had been "a lot of blood at the time." He had been treated for syphilis after positive blood Hinton and Wassermann tests at another hospital thirteen years before admission; numerous spinal fluid examinations were negative. The serologic tests never reverted to negative, however. When he was studied for epigastric pains a year before admission, he was told he had a gastric ulcer and was treated with a diet, which he did not follow. The symptoms left, however. He had always worked in bakeries or as a laborer.

Physical examination showed a well developed and well nourished man. There were a few slightly enlarged anterior cervical lymph nodes; the chest was clear. The heart was not enlarged; there was a Grade 1, soft, apical systolic murmur. The liver edge was not palpable, but the spleen was felt 1 fingerbreadth below the left costal margin. There was a bulge in the left inguinal region that was reducible.

The temperature was 98.6°F., the pulse 70, and the respiration 18. The blood pressure was 140 systolic, 80 diastolic.

Urinalysis was normal. Routine blood studies demonstrated a hemoglobin of 16.0 gm. per 100 cc. and a white-cell count of 14,600, with 72 per cent neutrophils, 11 per cent small and 5 per cent large lymphocytes, 3 per cent mon-

ocytes, 8 per cent eosinophils and 1% basophils. There were occasional polychromatophils, and the platelets were increased. The serum protein was 6.2 gm., and the nonprotein nitrogen 32 mg. per 100 cc. The prothrombin time was 23 seconds (normal, 15 seconds), and the clotting time and clot retraction were normal. The blood Hinton test was positive. A stool was guaiac negative.

The night after herniorrhaphy, a large hematoma developed in the wound; this had to be evacuated surgically. A single 500-cc. transfusion returned the hemoglobin to its preoperative levels, and he was discharged two weeks later.

Second admission; (three years later). The patient was admitted to the hospital with the complaint of a sour stomach for many months and, because during his outpatient visit splenomegaly was again found.

He had noted a gradual decrease in appetite over the past three years, with weight loss, fatigue and occasional soaking sweats. In addition a steady, sharp, boring pain under the right costal margin anteriorly had developed about three months before admission. Also, the abdomen had gradually increased in size. He relieved this pain, which occurred an hour to an hour and a half after meals, by lying down or by taking soda and omitting the next meal.

On physical examination the liver was palpable 2 fingerbreadths below the right costal margin, and the spleen filled the left side of the abdomen. It had an easily palpable notch and was firm, smooth and moderately tender.

Urinalysis was negative. The urinary urobilinogen was 0.3 Ehrlich units per two-hour specimen. Examination of the blood revealed a hemoglobin of 11.0 gm. per 100 cc. and a white-cell count of 13,000, with 39 per cent adult neutrophils, 15 per cent band forms, 7 per cent small and 10 per cent myelocytes and 5 per cent normoblasts. There were 10 per cent reticulocytes and hypochromia, anisocytosis and poikilocytosis of the red cells and with normal platelets. The total protein was 6.5 gm. (albumin 4.2 gm.), the nonprotein nitrogen 25 mg., the bilirubin 0.8 mg., the calcium 9.4 mg., the phosphorus 5.4 mg., the alkaline phosphatase

2.4 Bodansky units and the uric acid 5.7 mg. per 100 cc. Cephalin flocculation was three plus in forty-eight hours. A stool was guaiac negative. A quantitative blood Hinton test was positive in a titer of 1.64. An electrocardiogram was within normal limits. Roentgenograms of the chest demonstrated clear lung fields and a normal-sized heart. The bones of thorax, particularly the ribs, were denser than normal. A gastrointestinal series was normal except for displacement of the stomach by the enlarged spleen.

An iliac-crest bone-marrow aspiration was unsuccessful, but aspiration of a spinous process yielded bone marrow that showed abundant megakaryocytes, 65 per cent myeloid cells, with a shift to the right, 29 per cent erythroid cells and 6 per cent lymphocytes. No tumor cells were seen. The patient was discharged after a ten-day stay.

Third admission; (seven months later). He entered the hospital complaining of progressive abdominal swelling over the past four months, along with continued anorexia and distention after eating. He also had urinary frequency.

Physical examination was unchanged except for wasted facies, ascites, orthopnea and dullness and decreased breath sounds at the right base. There was four plus edema of the legs extending to the sacrum.

The routine laboratory studies were unchanged. The bromsulfalein test showed 5 per cent retention; the urinary urobilinogen was 3.0 units per 100 cc. and a Coombs test was negative. Other tests were as before. Paracentesis yielded 6000 cc. of opalescent, yellow fluid containing 150 mononuclear cells per cubic millimeter. The symptoms were much relieved. Repeated questioning failed to reveal a history of exposure to bone-marrow toxins. Biopsy of a left axillary lymph node was reported as showing chronic lymphadenitis and reticular hyperplasia. A splenic aspiration disclosed a profusion of red-cell precursors. A barium-swallow examination demonstrated large esophageal varices. The patient was discharged to be followed in the Outer Patient Department.

Final admission (eight months later). In the intervening period he had twenty-three abdominal paracenteses at almost weekly intervals, with the removal of about 5000 cc. of clear fluid each time. Despite salt restriction, diuretics and paracenteses, fluid continued to reaccumu-

late, and he became weaker. About a month before admission diarrhea developed, becoming severe four days before admission. He had had non-crampy, diffuse abdominal pains and ten to twelve stools a day.

With the exception of increased emaciation, the physical findings were the same as on the previous admission.

The temperature was 98.6°F., the pulse 110, and the blood pressure 85 systolic, 60 diastolic.

Routine blood studies showed a white-cell count of 27,000, with 31 per cent neutrophils, 40 per cent band forms, 6 per cent myelocytes, 6 per cent blasts and 6 per cent basophils.

Culture of ascitic fluid grew out *Staphylococcus aureus*, and penicillin therapy was begun, along with streptomycin and subsequently chloramphenicol. Penicillin was given intra-abdominally. The patient gradually became weaker and less responsive over the next month, with decreasing oral intake. He was maintained with parenteral administration of fluids and antibiotics. Repeated cultures of ascitic fluid grew out *Staph. aureus* and nonhemolytic streptococci. He died quietly on the forty-fifth hospital day.

DR. ROGER WHITE

The case for discussion today is that of a 60-year old retired Greek bakery worker who presented with a chief complaint of inguinal hernia. During the course of the next four years he developed progressive symptoms of a disease of the hematopoietic system which led ultimately to his death.

The past history is significant only in that he had been treated for serological syphilis thirteen years previously. Three years prior to admission he had had an operation for "locked knee." He thought "there had been a lot of blood" at this time. Just what this means, I am not sure, but perhaps it has some significance in light of the hemorrhagic tendency manifested on his first admission. A year prior to his first admission he was told he had a gastric ulcer. This protocol is so long that I feel it serves our purpose best to summarize the outstanding clinical and laboratory features:

1. Splenomegaly, which was minimal at time of first admission, but reached massive proportions before death.

2. Hepatomegaly became apparent later, but as was the case with the spleen, became more and more prominent.

3. Evidence of hepatic dysfunction, as manifested by the prolonged prothrombin time on the first admission; rising serum bilirubin and urinary urobilinogen; the development of ascites and dependent edema.

4. A definite hemorrhagic tendency in the face of normal clotting time and clot retraction, elevated platelet count and an only moderately prolonged prothrombin time.

5. A moderately elevated serum uric acid level and lowered alkaline phosphatase level.

6. The only x-ray findings reported indicated a normal gastro-intestinal series at first; from esophageal varices were demonstrated at the end; and increased density of the bones of the thorax.

7. Perhaps the most significant clues are to be found in the peripheral blood:

On the first admission, hemoglobin level was normal; there was a polymorphonuclear leucocytosis. However, at this time, polychromatophilia and thrombocytosis were noted.

On the second admission, hemoglobin level had dropped to 11.0 gms.; but the smear showed 5% basophile, 10% myelocytes, 5% normoblasts. In addition, there was present a 10% reticulocytosis, hypochromia, anisocytosis, poikilocytosis and normal platelets.

8. Iliac crest-bone marrow aspiration was unsuccessful, but aspiration of a spinous process that showed abundant megalocytes and some evidence of myeloid metaplasia.

9. Splenic aspiration disclosed a profusion of red cell precursors.

On his final admission he was in a very grave condition, after having had 23 abdominal paracenteses over the past eight months. I suspect that his complaints of diarrhea, abdominal cramps and the findings of low blood pressure can be attributed, at least in part, to sodium depletion. His blood count and peripheral smear on his last admission could certainly be interpreted as that found in myelocytic leukemia. The patient succumbed to his underlying disease with the help of peritonitis.

If I attempted to work my way through an elaborate differential diagnosis, which is warranted, it would consume ten times my allotted time. I believe that this is polycythemia vera that went through the natural history of the disease to myeloid metaplasia with a terminal

picture of myelogenous leukemia and chronic osteosclerosis.

An appreciation of the protean pathological findings seen in polycythemia vera of long duration has crystallized an evolutionary pattern that encompasses all the variations seen. It has long been obvious that stimulation of a particular hematic series in the marrow often induces a reactive response in the other hematic cellular components. Localization of hemopoiesis to the marrow cavity shortly before birth results in a physiological regression of heteroplastic foci derived from the cytoplasmic reticulum. Nonetheless, these sites retain their potential functional capacity to produce differentiated hematic cells when stimulated.

In polycythemia vera the initial fundamental disturbance may very well be a reticulosis and the extra-medullary blood formation which always accompanies polychthemia vera of a sufficiently long duration is probably of autochthonous origin and is not compensatory. A concept such as this offers an attractive hypothesis for the numerous transitional clinical and pathological findings frequently encountered in polycythemia vera, leukemia, myelofibrosis, osteosclerosis and associated syndromes. Thus, the acute syndrome are usually manifested along one potential line of development, show invasive, disorganized, neoplastic tendencies of the proliferation cells and are rapidly fatal. In a few cases of acute erythremic myelosis studied, the patients always died with the characteristic marrow and blood findings of acute myeloblastic leukemia. It would appear that the erythro-genetic stimulus eventually spent itself and a myeloblastic one prevailed terminally.

In the case of erythremia the stimulus to erythropoiesis predominates, although simultaneous stimulation of the granulocytic and platelet precursor cells occur. Non-hematic increased cellular activity in the fibroblasts and osteoblasts also occur as well as reticulum cell proliferation, the latter being more obvious in the spleen. The bone marrow and peripheral blood reflect the generalized hyperactivity with panmyelosis of the marrow, and immature red and white cells and increased platelets in the peripheral blood.

The extra-osseous potential marrow space appears to undergo the same proliferative activity and the liver and spleen become enlarged due to hyperplasia of the cytoplasmic and fibrillar

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reticulum. Erythremia and myeloid metaplasia go hand in hand. The phase of polycythemia with so-called polynuclear cell leukemia or the syndrome of myelofibrosis may appear. In other case, the megakaryocytes predominate with the resultant picture of acute or chronic megakaryocytic myelosis; still others display hyperactivity of the osteoblasts and bone formation encroaches upon or completely replace marrow activity, analogous to the fibrous tissue of myelofibrosis. At this phase of the disease, one may see a severe anemia, a leukemoid or leukemic blood picture, thrombocythemia or thrombopenia all in a patient who a number of years before had a severe polycythemia.

Myeloid metaplasia and myelofibrosis need not necessarily be associated with polycythemia vera, but may be idiopathic in type. Of a large series, 58% had a probable antecedent polycythemic phase, the remainder were idiopathic.

Polycythemia vera is primarily a disease of middle age. The course is one of many years' duration; a normal life expectancy may be reached. There is an asymptomatic developmental phase, the duration of which must remain conjectural although Dameshek has ascribed a period of five years for this.

Subsequently, during the stage of erythrocytosis lasting from five to twenty years with its myriad of symptoms referable primarily to hypervolemia and panmyelosis, the diagnosis is usually made.

Laboratory and clinical findings in Polycythemia Vera:

A. Laboratory

1. Erythrocytosis
2. Granulocytic leukocytosis
3. Thrombocytosis
4. RBC and WBC immaturity
5. Panmyelosis
6. Blood pigments normal

B. Clinical

1. Symptoms
 - a. Cardiovascular
 - b. Neurological
 - c. Gastro-intestinal
 - d. Hemorrhagic
2. Plethora
3. Splenomegaly
4. Hepatomegaly
5. Cardiac normal; pulmonary normal

Polycythemia vera does not signify only a hypervolemic phase; however. A period of rela-

tive normalcy as far as the red cells are concerned producing the so-called remissions, have been reported. This phase should be looked upon as the first sign of diminished erthropoietic activity in the marrow and the early development of the syndrome of myeloid metaplasia. The blood picture at this time is identical to that first described in detail in this case. These red cell changes are characteristic of either polycythemia vera or the idiopathic type of myeloid metaplasia. The so-called polynuclear cell leukemia probably falls into this group of early myeloid metaplasia. The marrow may still be hyperplastic but instead of showing a panmyelosis, it now shows some reduction in erythroid elements with an increase in the myeloid cells, the fibrillar and cytoplasmic reticulum and the megakaryocytes. Simultaneously, with the marrow changes, the spleen enlarges and becomes the site of extramedullary blood formation. A splenic puncture at this time will reveal the findings of myeloid metaplasia.

The changes in the marrow and spleen proceed unchecked with marrow proliferation of fibroblasts and increasing encroachment upon the Erythroid tissue. Fibrosis and osteosclerosis merely signify that the stimuli, spent as far as the red cells are concerned, now show increasing activity toward the other hematic cells as well as toward the fibroblasts and osteoblasts. Red cell activity is gradually relocated to extramedullary sites. With the progression of the disease, white cell hyperactivity may predominate, resulting in a terminal picture of myeloid leukemia. In some cases the degree of megakaryocytic hyperactivity may be such that the condition has been called megakaryocytic leukemia or myelosis; in others, megakaryocytic, myelocytic, fibroblastic and osteoblastic activity may all be stimulated to produce complex clinical and post-mortem findings.

I apologize for not spending more time on discussion of a differential diagnosis, but I felt that this case fitted into a neat pigeonhole, a pigeonhole which was once a cluttered maze of diagnostic nonentities such as: leuko-erythroblastic anemia, myelopathic anemia, osteosclerotic anemia, aleukemic megakaryocytic myelosis, etc.

Brinkhous and Wasserman in the Bulletin of the N.Y. Academy of Medicine, May, 1954, have written a classic entitled: Polycythemia Vera — Its Course and treatment: Relation to Myeloid

Metaplasia and Leukemia." Their concept, as discussed by me here today, brings together the multitude of variegated names and syndromes representing one common disease, erythremia.

My diagnosis:

1. Spent polycythemia Vera
2. Myeloid Metaplasia
 - a. liver
 - b. Spleen
 - c. bone marrow
 - d. lymph nodes
3. Diffuse myelofibrosis and osteosclerosis
4. Peritonitis

DIFFERENTIAL DIAGNOSIS

Dr. William H. Baker; This sixty-one-year-old man had a progressive disease involving the spleen and liver with the appearance of immature cells of both the red-cell and white-cell series in the peripheral blood and the terminal development of recurrent and relentless ascites. This process can be divided into two phases; the first occurred over a period of three years, during which the disease progressed slowly, and the second over the period of fifteen months, during which the symptoms progressed more rapidly to death.

A year before the first admission he was said to have had a gastric ulcer, which perhaps is a "red herring" because there was no evidence throughout the remainder of the history that a gastric ulcer existed. The fact that he worked in a bakery probably had little to do with the subsequent illness. The important finding was that the spleen was felt 1 fingerbreadth below the costal margin and progressively increased in size over the next four and a half years. At this time the hemoglobin was 16 gm. per 100 cc., and over the succeeding three years it dropped to a low level. Also, he had an elevated white-cell count, which is consistent with inflammatory changes within the inguinal hernia, but in view of the subsequent course I think the increased white-cell count is significant. Another pertinent point is that, in spite of the platelet increase, the prothrombin time was reported as 23 seconds with a normal of 15 seconds. It is unusual that the prothrombin time was not repeated and that vitamin K was not given before the operation. I do not know how to interpret the prolonged prothrombin time at this stage of the disease. It was suggested throughout the history that there was a bleeding

tendency, and that impression is substantiated by the fact that a large hematoma developed after the operation.

In the three-year interval this patient, although he was relatively well, intermittently had weight loss, fatigue and occasional soaking sweats. These constitutional symptoms, of course, are those of any diffuse pathologic process. Tuberculosis certainly could have caused these symptoms. Malignant lymphoma, especially Hodgkin's disease, could have produced these symptoms, as could carcinomatosis. The steady, boring pain in the right costal margin that occurred intermittently through the remainder of the course is suggestive of a carcinoma of the pancreas. The fact that the pain was relieved by lying down is somewhat against a pancreatic neoplasm. Although the pain with a pancreatic neoplasm can be of any character, it usually radiates to the back and is relieved when the patient stands up or bends over.

At the time of the second admission, the liver had become palpable and the spleen filled the entire abdomen. This is quite an increase in size over three years. The patient had an anemia that was not severe. The white-cell count again was slightly elevated, and there were immature white cells and normoblasts in the peripheral blood. This is most significant, suggesting some type of disorder in the myeloid series of cells. At this time there was reticulocytosis, suggesting an increased red-cell destruction. The coombs test at a later date was negative; it was not done at that time, but the urinary urobilinogen is not a valuable test of hemolytic anemia because it is nonspecific, has to be done on a fresh specimen and is subject to a great deal of error. Moreover, it can be elevated with constipation and various other disorders that physicians are not especially looking for when they request the determination. The test is helpful but not diagnostic of any disease. I do not mean to skip over the phosphorus of 5.4 mg. per 100 cc.; that was definitely elevated and may have been related to the underlying disease. Since this determination was not repeated and confirmed it is difficult to interpret. The uric acid of 5.7 mg. per 100 cc. is at the upper limit of normal and probably consistent with the process that this man had; uric acid elevations are found in destructive lesions of the red or white cells, leukemia, polycythemia vera, myeloid metaplasia and gout.

he serologic tests were positive, and treatment was given. I am interpreting this to mean that the patient was treated for syphilis with successful suppression of activity but no reversal of the positive serologic tests.

The bones of the thorax, especially the ribs, were denser than normal. May we see the x-ray films now?

Dr. Stanley M. Wyman; The first examination of the chest shows clear lungs and a heart of normal size and shape. The ribs, however, look denser than usual; they have a uniform chalky appearance. I do not see any areas of destruction or any areas of localized increased density. Examination of the gastrointestinal tract done on the second admission shows the tremendously enlarged spleen overlying the iliac crest and displacing the stomach to the right of the midline, the duodenal cap and loop lying quite far to the right. The liver is not seen on these films. Varices are suggested at that time and are definitely present on the examination done seven months later. At the time of the second admission the chest is smaller because the ascitic fluid in the abdomen is pushing the diaphragm up. Again, the bones are definitely writer and therefore denser than normal.

Dr. Baker; Do you think you would notice that increased density if you were looking at a routine chest film? This chest film itself seems to be a little denser.

Dr. Wyman; That is a difficult question to answer now when we know the whole clinical picture; however, I think that these bones are denser than normal. This is borne out by the last film, in which the ribs are seen through the very large spleen. The increased density of the spine and pelvis is a little less striking. I do not see any evidence of a gastric or duodenal ulcer; the duodenal loop seems normal in size and shape. If there is disease in the pancreas, I do not recognize it. On the pyelogram, which is not recorded in the protocol, the right kidney is slightly smaller than usual. The calyceal system does not show any localized abnormality. The abdominal aorta is sclerotic, which is not unusual in a man of this age. There is surprisingly little degenerative change in the spine for a laborer. This later chest film again demonstrates the diffusely dense ribs.

Dr. Joseph C. Aub; The spine does not show the increased density.

Dr. Wyman; It is difficult to be sure of that.

We are seeing the spine through a large, ascitic abdomen, and those bones are quite well visualized for such an examination. The ribs are denser than one expects and remind me of the picture we have seen with sickle-cell anemia with tiny bony infarcts fluorine poisoning or myeloid metaplasia.

Dr. Barker; I shall accept the fact that there was increased density of the bones.

The iliac-crest bone-marrow aspiration was unsuccessful but aspiration of the spinous process revealed abundant megakaryocytes in the bone marrow and 65 per cent myeloid cells with a shift to the right, which means an increase in maturity of the myeloid cells. The 29 per cent erythroid cells is within approximately normal limits. One has to define the type of myeloid cells seen and the percentages, before one can say that 65 per cent is absolutely normal, but certainly at this point no diagnosis of myelogenous leukemia or any other process could be made. The fact that no tumor cells were found is somewhat gratifying, but tumor cells may be present throughout the bone marrow and not be found at one aspiration.

During the final admission, the pertinent points are the extensive peripheral edema and ascites, the normal bromsulfalein test, which I consider the best single test of liver function, and the slightly elevated urine urobilinogen, which is consistent with an accelerated destruction of red cells. Paracentesis yielded 6000 cc. of opalescent fluid containing 150 mononuclear leukocytes per cubic millimeter. I assume that no tumor cells were found. I should like to know the specific gravity and the total protein of the fluid — especially the total protein in view of the fact that about 115,000 cc. of fluid was removed over the thirty-two weeks. If the total protein was high it means considerable loss of protein from the paracenteses.

Dr. Benjamin Castleman; The protein of the ascitic fluid was 2.5 gm. per 100 cc., but infection was present at that time.

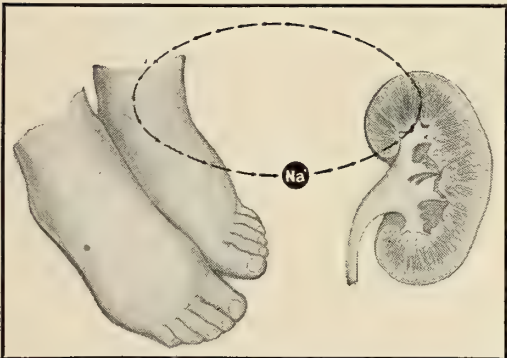
Dr. Barker; This is a high level. I suspect that the serum protein fell during the last admission.

An important negative finding was a biopsy of a lymph node, which showed only chronic inflammation and slight reticular hyperplasia. Of course lymphoma could have been present elsewhere. The splenic aspiration demonstrated a profusion of red-cell precursors. I assume that

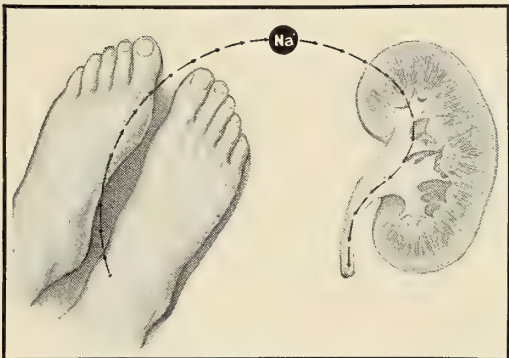
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100 per cent of the cells were erythrocyte precursors. This is significant and pertinent to this man's disease. The development of ascitic fluid, without the presence of a lowered protein or any indication of cirrhosis, and the presence of the esophageal varices suggest portal hypertension that was not of hepatic origin or due to altered serum protein but was caused either by the partial thrombosis of the portal vein or by pressure on the portal vein. I attribute the severe diarrhea to the same etiologic process — namely, venous thrombosis in the mesenteric vessels. Finally a *Staph. aureus* infection of the ascitic fluid developed, which I suppose Dr. Edward H. Cass, of the Boston City Hospital, would call iatrogenic. Unfortunately, as so often occurs, the organism was undoubtedly resistant to penicillin.

To put this entire progression of symptoms together, I believe that the enlargement of the spleen, which was enormous in the final stage of the disease, the gradual enlargement of the liver, the presence of immature cells in the peripheral blood and the normal bone marrow with a predominance of the myeloid series mean that this man had myeloid metaplasia. This condition has twenty synonyms or more and is at present regarded not as a disease entity but as a stage in a group of conditions called the myeloproliferative disorders. Many people believe that polycythemia vera, myeloid metaplasia, myeloid leukemia and other, more obscure myeloproliferative disorders are probably a single entity with a progression in some cases from one to the other. They certainly resemble each other in many respects, and I believe that they are probably close relations of a basic disorder. I interpret the ascites and the eventual diarrhea as due to partial portal vein thrombosis, mesenteric-vein thrombosis and staphylococcal peritonitis. I cannot rule out pancreatic carcinoma as the "sleeper" in this clinicopathological conference, but I am not going to make that diagnosis.

Dr. Jacob Lerman; I might add that terminally the patient began to bleed from the gastrointestinal tract.

Dr. Bernard M. Jacobson; As I recall, a very obscure fever that is not mentioned in the protocol was present through most of the hospital stay. The physicians were worried about lymphoma; that was the reason for the biopsy.

Dr. Baker; Lymphoma is a better possibility

in view of the fever; I did not know about that. I shall still choose myeloid metaplasia with partial portal-vein thrombosis and mesenteric-vein thrombosis.

CLINICAL DIAGNOSIS

Agnogenic myeloid metaplasia.

Peritonitis, subacute.

Toxic encephalopathy.

Dr. William H. Baker's Diagnoses

Myeloid metaplasia.

Mesenteric-vein thrombosis.

Staphylococcal peritonitis.

Anatomical Diagnoses

Agnogenic myeloid metaplasia, with extramedullary hematopoiesis in spleen, liver medullary hematopoiesis in spleen, liver, kidney and para-aortic lymph nodes, and diffuse myelofibrosis and myelosclerosis.

Splenomegaly.

Portal hypertension, etiology undetermined, with esophageal varices and ascites.

Peritonitis, acute and chronic.

Pathological Discussion

Dr. Castleman; Autopsy confirmed the diagnosis that was made both on the ward and by Dr. Baker — that is, a condition that we call myeloid metaplasia for want of a better term. The bones were all very sclerotic. A section from a vertebra showed the fat and marrow elements replaced by loose connective tissue and fibrin — what Dr. Baker called the myeloproliferative phase — and a marked increase not only in size of the bone trabeculae but also in their number, without any evidence of activity of the osteoblasts. Since there was no lining up of osteoblasts such as one expects in the conditions that are actively forming bone this much have been a slow process of bone formation, stimulated apparently by the myeloproliferative reaction in the marrow.

A physician; Were there any osteoclasts?

Dr. Castleman; Very few osteoclasts or Howship's lacunae. The bone looked inactive and perfectly normal except that there was more of it. There was little marrow left and certainly a marked atrophy of the marrow elements.

The liver weighed about 1850 gm. — only slightly above normal — and the spleen 1600 gm. — tremendously enlarged. Microscopical examination revealed throughout the spleen extensive hematopoiesis, primarily of the red cells although there were some myeloid elements.

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There was no cirrhosis of the liver. There was some hematopoiesis in the liver and some fibrosis around a few of these cells but apparently not enough to cause the portal hypertension, which I cannot explain. We found no thrombosis in any of the splenic or mesenteric veins. The ascitic fluid was voluminous and infected and was certainly a major cause of the death.

Dr. Baker; Do you think that there was pressure on the veins to account for the signs of portal hypertension.

Dr. Castlemen; That may have been one factor. We were unable to determine the etiology of the myeloid metaplasia. There was no evidence of exposure to benzene; patients whom we have seen with this intoxication show exactly the same picture — a myelofibrosis. We had always been under the impression that the hematopoietic changes in the spleen and liver were secondary and compensatory to the destruction of the bone marrow; more recently, some authorities have stated that whatever is irritating, stimulating or destroying the bone marrow elements in the spleen, liver and lymph nodes so that the reaction is a diffuse one throughout the body and not necessarily hematopoiesis secondary to bone-marrow destruction.

Dr. Wyman; Regarding the question of whether or not the bones were originally interpreted as being denser than normal, our official interpretation was as follows; "The findings are those of tremendous splenomegaly and a definite suggestion that the bones are somewhat denser than usual. The appearance suggests myeloid metaplasia."

SOUTHWESTERN SURGICAL CONGRESS

THE Southwestern Surgical Congress is meeting in Tucson April 16, 17, 18, 1956. The guest speakers will be: Dr. John Adriani, the Director of the Department of Anesthesia at Charity Hospital of Louisiana. Dr. Adriani will discuss a Symposium on Anesthesia.

Dr. Joseph Boyes, Los Angeles will discuss Hand Injuries.

Dr. Robert A. Wise will present a paper on Carcinoma of the breast.

Additional papers to cover the three day program will be presented by members of the Southwestern Surgical Congress.

AERO MEDICAL ASSOCIATION CONVENTION

THE Annual Meeting of the Aero Medical Association will be held at the Drake Hotel, Chicago, Illinois, on April 16, 17 and 18. This year's meeting will provide the most comprehensive review of current progress in Aviation Medicine ever presented. There will be 137 papers presented dealing with every aspect of the field and coming from military and civilian sources in nine countries. Of particular interest will be the section meetings which will include in their agenda panel discussions of vital topics by top authorities in each field. Those sections convening will include the following sub-specialties; Space Medicine, Civil Aviation Medicine, Aviation Physiology, Aviation Ophthalmology, Acceleration and Deceleration, Air Passenger Transportation, Noise and Vibration, Pilot Selection and Aviation Psychology, Personal Equipment, Aviation Pathology, Aviation Medical Education, and a combined symposium on Escape from High Performance Aircraft. All members of the profession are cordially invited to attend any or all of these sessions.

The Wives Wing of the Aero Medical Association, composed of over three hundred wives of Association Members will hold their annual functions on the same dates. All wives of persons in the profession are also cordially invited to attend.

MEETING NOTICE

District VIII of the American Obstetrical and Gynecological Society will hold a meeting in Tucson, Arizona on April 9th, 10th and 11th, 1956.

Postgraduate Educational Courses Five, Two-Day Regional Institutes

Postgraduate Educational Courses Five, two-day regional institution, sponsored by the California Medical Association. North Coast counties at Santa Rosa — April 5-6, 1956; San Joaquin Valley counties — at Fresno — May 10-11, 1956; Sacramento Valley counties — at Lake Tahoe, June 21-23, 1956. Address all inquiries and communications to: Dr. C. A. Broadbuss, Director of Postgraduate Activities, Post Office Box A-1, Carmel, California.



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THE *President's* PAGE

PROBLEMS OF THE DOCTORS OF ARIZONA

AT the present time and the past few months, I am quite sure that all the doctors of Arizona have been disturbed by various legislative matters that have reached us through the newspapers or by other means. I know that it will be of great assurance to you, as it was to me, to know that your Legislative Committee headed by Dr. Jesse Hamer, Dr. Millard Jefferies of Phoenix, and their committee, have been on the job constantly. While it has been impossible for them to keep all the Societies informed at exactly the time that things were happening, they have done an excellent job, and I believe have carried out the wishes of the Arizona doctors.

You will be glad to know that your letters concerning House Bill 7225 have been effective in that hearings are now being held concerning this bill. However, the job is not yet completed. It is probable that constant attention must be paid to a national legislation as it relates to health.

Another subject of interest is Mental Health. Bills are being introduced in this country, and you will hear more about them.

Blue Shield is preparing, as you know, for changes which have been made in regard to including medical service in their policy. There will be certain other additions that will be discussed by your House of Delegates who constitute its (Blue Shield) corporate body, at our annual meeting.

Dr. Donald Polson of Phoenix, President of Blue Shield has done a magnificent job, and I believe that the Liason Committee of your association headed by Dr. Edward Hayden and Dr. Carlos Craig, will have many of the questions clarified that may be somewhat controversial at your annual meeting.

These then, are a few of the many problems that are being handled by very active committees. If you as an individual wish to secure information regarding the status of either legislation, or other problems, do so by either contacting your local society or your State organization. It may be that information that you desire does not reach you in sufficient time to keep you informed fully. This lag I am sure is understandable, and yet, I would invite you all to write your association, or contact it indirectly through your own representatives for any problems or information that you may desire.

Harry E. Thompson, M.D.

President, Arizona Medical Assn.

Editorial

ARIZONA MEDICINE

Journal of
ARIZONA MEDICAL ASSOCIATION, INC.

VOL. 13 MARCH, 1956 NO. 3

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The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
5. Submit manuscript typewritten and double-spaced.
6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.

The Editor is always ready, willing, and happy to help in any way possible.

DANGER AT THE SOURCE

THERE are 82 Medical Schools in the United States, located in only 57 cities — 82 Medical Schools for the whole 164 million of us. From them come the family doctor, all the doctors for our hospitals and communities, for industry and the armed forces, for research and many specialties. Without them — no Heart Fund, no Cancer Fund, no public health program or medical service of any kind could function. These services all depend on the doctor, and back of the doctor stands the Medical School that trained him.

There is a continuing deficit of about \$8.00 per week per medical student for operating expenses in all Medical Schools, private and tax supported alike. The cost of training a

doctor is now about \$15,000.00 Tuition covers less than 20% of this cost. In 1955 the total enrollment in our Medical Schools was 28,583, and the operating deficit in the neighborhood of eleven million dollars.

The problem of financing Medical Education concerns every citizen of our country, but first and foremost it concerns the doctors. A minimum of \$10.00 from each doctor would fulfil the obligation of the profession. This added to the amount contributed by industry to the cause each year would keep Medical Education free of subsidies by the Federal Government.

HAVE YOU DONE YOUR SHARE?

—O—

AUSTRIAN DOCTORS STRIKE

ON AUGUST 25th and 26th of last year there was an event in Austria which should be of interest to every practicing physician. On these dates the Medical and Dental professions of Austria staged a protest-strike against the present system of practice in that country. They finally told the public by open rebellion how they disapproved of a system of socialized medicine in which they now find themselves mere helpless pawns. On these two days the doctors and dentists closed their offices, saw no patients, did no surgery and signed no death certificates or other papers. Only for emergency cases was provision made. They gathered and marched by hundreds down the streets of Vienna wearing their characteristic long white coats, carrying banners to inform the public of the reasons for the strike. Handbills were passed out, public address systems and placards on every doctor's office told their story. The newspapers carried front page pictures and headlines. They asked only for a square deal and freedom to practice their profession.

To understand how they have lost this freedom we must go back to the end of the first world war. In 1918-19 Austria was not only a defeated nation but she was stripped of most of her territory. Vienna was the capital city of an empire but the empire was taken away. The people, particularly in Vienna, had no way to earn a living. To provide some medical care for this city of nearly two million people a

system of clinics and free medical service was set up. As employment slowly came back a system of socialized medicine developed and was paid for by payroll deductions. The Unions and Social Democrat party are very strong in Austria and have insisted on continuing this system.

Today 85% of the people of Austria come under this socialized medical program. Only the farmers and some of the people in the upper income brackets are not included. Now the Bureaucrats want to include these groups also. This is one of the things the doctors object to since these are the few people who still pay on a fee basis. For the 85% covered by insurance, here is what takes place. The patient takes his medical slip to a nearby doctor and receives treatment. He continues treatment for as long as three months under this same slip. He cannot change doctors during this time unless he wants to pay the new doctor. The physician is allowed to prescribe ordinary medicines, but many more expensive drugs (including penicillin) are on the chief doctor's list and before the patient can fill a prescription for one of these drugs, he must get an OK from the head doctor's office. This is such a nuisance that doctors often refer patients to a hospital for treatment where there is no limitation on the drugs used. Much of the doctor's time is taken up with forms and reports. A suburban doctor's office I visited had pigeon holes for over forty different forms.

The doctor receives his pay from the Insurance fund by sending in his collection of patients' slips at the end of each three months period. For each slip he receives 25 Austrian Schillings, the equal of about one dollar. This is his full pay for each patient seen during the three months period, regardless of how many times he has seen him. Under this system many of the doctor's patients may earn more than he does even though they do unskilled labor. But this is not the worst. A doctor cannot receive Insurance patients unless he has a contract with the Insurance Company and unless there is an area not already covered, they will not issue a contract to a new doctor. Hence there are many doctors who cannot practice and this is the freedom to practice the doctors asked for in their strike.

Obstetrics, Surgery and other hospital cases are handled in public hospitals mostly by doc-

tors on salary. These salaries are extremely low. An assistant professor with whom I worked had been in one of the University Hospital Surgical clinics over ten years and is an excellent surgeon. He receives the equivalent of forty dollars per month. The head orderly, who comes under union wage scales, gets over twice this much. The women who scrub the floors get as much as the surgeon. So the doctors in their strike ask also for more adequate pay.

The Insurance System that covers medical practice for 85% of the people of Austria is a Bureaucracy ruled by representatives of the employers, the Social Democrat party and the Unions. The doctors are not represented. For every doctor employed there are nine non-medical employees, all with the proper political affiliations. The Bureaucrats themselves are not yet satisfied with the system. They want it to include everybody and their plan is to establish clinics and handle all medical practice through these. Doctors in these clinics, some of which are already operating, will work entirely on a salary basis. An x-ray specialist, I learned, works about five hours a day in such a clinic for about \$100.00 a month. The clerks and other non-professional workers in the clinics are paid almost as much. Austria badly needs new hospitals but they are using their reserve to construct large clinics to extend this form of practice.

Payroll deductions to cover social security as well as medical care are high. In one specific instance, I was able to learn, the salary was 2160 Austrian Schillings and deductions were 440. So, the Austrian doctors' strike was a protest and warning, not against the Social Insurance System of medical care but against the impossible conditions which have developed. They are fighting for justice.

Their fight is primarily against four things:

- (1) Arbitrary dismissal. Other workers have the right to a hearing if fired, but a doctor's contract can be voided at any time.
- (2) Poor pay. Also other workers get extras for overtime, but not the doctors.
- (3) Admission to the Insurance System of the wealthier groups.
- (4) Refusal to young doctors of the right to work by not giving them contracts.

I have brought back from Austria newspapers, handbills and photographs pertaining to the protest-strike and shall deposit them in the

County Medical Society Library.

It is hardly necessary to say that we must do everything in our power to prevent medical practice in our country from falling into the hands of the bureaucrats and becoming the political racket that it now is in Austria.

Philip E. Rice, M. D.

LETTERS TO THE EDITOR

December 25, 1955
R. Lee Foster, M. D., Editor
Arizona Medicine
112 North Central Avenue
Phoenix, Arizona

Dear Doctor Foster:

On this gala day of all days, allow me to offer the finest of the season's greetings to you and your staff. Today I am enjoying a chance to catch up on my correspondence.

Many thanks for forwarding a copy of ARIZONA MEDICINE to me. You did a splendid job on my recent paper, and I appreciate your kindness greatly. While reading this issue, I was struck with the obvious and highly pleasurable attitudes expressed throughout your publication. I note that all those individuals who are concerned with this journal apparently derive a great deal of satisfaction from it. I admire this attitude greatly, and I only hope other publications would obtain a similar attitude. Then it would be a pleasure to work with them. The spirit of friendliness exudes from the pages of your splendid journal. I trust sincerely you will never lose such a wonderful spirit.

I am busily engaged in putting our forthcoming volume on RURAL PRACTICE together for our publisher, Mr. Charles C. Thomas. His son is to come here for a conference perhaps during this next week. When this book is completed and finally published, I do hope you will be able to review our volume in your excellent journal.

Many thanks for your kindness in my behalf. And with my best personal regards and all good wishes of this merry season,

Sincerely yours,
Editor, TEXTBOOK OF RURAL PRACTICE
Wallace Marshall, M. D.
Two Rivers, Wis.

Thank you, Dr. Marshall. A Happy New Year to you. — ed.

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TOPICS OF *Current Medical* INTEREST

RX., DX., AND DRS.

By Guillermo Osler, M. D.

AN Arizonan and his work have again been mentioned in 'Medical News', a very good publication of the Ciba company. Dr. Robert N. Plummer of Phoenix is quoted as having strongly underscored the dangers of delaying treatment of SPEECH DISORDERS in children. . . . The 'News' quoted his report in ARIZONA MEDICINE on the subject. They also referred to a report of ours on fungus diseases only two months ago. . . . 'Medical News' MUST be a good paper.

This year's meeting of the AMERICAN ASSOCIATION FOR THORACIC SURGERY should be stupendous. Even the announcement seems to shape that way. The Ass'n. is a super-surgical group; Dr. Paul Samson, from whom we get our data, is their king-size Secretary; and the Miami Beach hotel in which the meeting occurs is the Fontainebleau, otherwise known as the Ritz Hilton Waldorf Astoria Biltmore, the 'Most', or pretty darn large. . . . The 3-day program begins on May 7th, and includes all sorts of pulmonary, thoracic, cardiac, and cardio-vascular surgery. It should be quite an hegira. . . . (Miami Beach is in Fordila, or Fordila, or some such place in the southeast).

Two reports from the growing research center at the Los Angeles' CITY OF HOPE were given at a recent meeting of western Clinical Research groups. . . . Dr. R. T. Jordan believes that viruses inactivated by cobalt gamma radiation are more safe, stable, and potent than others. . . . Dr. Howard Bierman has found that the 'buffy coat', which can be separated from whole blood by the ADL Cohn Blood Fractionator, may act as an anti-leukemic agent. It has been shown to contain an anti-hemorrhagic effect, and (in a small series of patients) it has caused clinical improvement.

It is a sad paragraph indeed which has to mention the death of DR. LOUIS J. REGAN. He spoke at the Arizona Medical Association meeting last year. . . . He was a most versatile person, being a doctor, a lawyer, a good speaker, and a fine teacher. . . . Los Angeles and Arizona will miss him in every respect.

There are medical implications in a report of the Sub-committee on Tax Policy. Mr. Greenewalt, the chairman (and president of du Pont), says that "when incomes taxes in the high brackets take so much of a businessman's dollar that he is working much harder for the government than for himself, there is considerable likelihood that he will TEND TO REDUCE HIS EFFORTS. . . . And a good thing too, we say. Less work

means less tension, and less ulcers, less hypertension, etc., and a better disposition, better parenthood. . . . Even if Mr. Greenewalt can't get the Treasury department interested, he should establish a fine tie-in with the Health, Welfare and Education bureau.

Time was when the word 'prosthesis', if used at all, meant a wooden leg or a substitute arm. . . . Now it applies to such things as lucite sphere emplacements in the chest, to plastic blood-vessel grafts, and perhaps to the ordinary 'falsies'. . . . A plastic-coated glass fabric has been used by Girvin and Merendino of Seattle as a SUBSTITUTE FOR ARTERIES in animals, and recently in 3 humans. The fabric is called 'Teflon', or polytetrafluorethylene, and is said to be slick, nonwetttable, of great tensile strength, and only costs \$15 per yard. The most dramatic use was to replace a 17cm. length of aorta in a 77-year old man. The duration of its 'life' is still uncertain.

The Electrodyne Co., Inc., sent out a simple but surprising testimonial to a fairly recent invention. It consisted of "a partial list of users" of their Electrodyne CARDIAC PACEMAKER, or Pacemaker-Defibrillator. There were more than 200 hospitals in almost 40 states which are so equipped. . . . Most of the hospitals are on the eastern seaboard near the source of the equipment in Massachusetts. There was no Arizona hospital on the list at present.

A semi-medical book has been produced by the Biological Sciences Foundation, Ltd., called "TEA". It consists of eight papers given at a conference of the N.Y. Academy of Sciences, and they tell all about it. . . . We can remember old Dr. Loevenhart tell his pharmacology classes, "Don't expect much supper if your wife goes out to a tea party. The mild astringent effect dulls the appetite, and she will come home late and not hungry." . . . (I wish that all of pharm. had been so clearly remembered).

Another new book, from the Beacon Press of Boston, has an intriguing title, — "Standing Room Only: The Challenge of Overpopulation." . . . The author's name is fairly appropriate too, if you are a dialectician, — Sax.

Due to our neglect the 1955 CONFERENCE ON OCCUPATIONAL DISEASES was not described in this column. It is now called the 'McIntyre-Saranac Conference', with the first part of the

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name being taken from the McIntyre Research Foundation of Canada, or the McIntyre gold mines. . . . The 1955 meeting was the eighth in the past 20 years. Most of the experts in dusty diseases on this continent were present, plus Dr. G. W. H. Schepers of South Africa, now director of the Saranac Laboratory (once run by the late great Dr. Leroy Gardner). . . . Many points of interest were discussed. Probably the most controversial was the 'pre-work aluminum inhalation therapy', now in use in many mines and foundries in Canada and the U. S. Few people realize the widespread trial this method is being given, since its use has not been widely publicized. 10,000 miners have used it for 10 years in Quebec alone. The general feeling is that it has been helpful. . . . Van Ordstrand reported that 17 of 66 patients with pulmonary fibrosis had the Hamman-Rich syndrome. This makes it seem fairly common. The use of cortisone is said to be dangerous in this condition, in contrast to several other lung fibroses.

PULMONARY FIBROSIS is a topic and/or lesion about which are/could/should/must/may have more information. Several of its possible causes are enigmas, and must individually be solved. . . . Sarcoid, for instance, falls in a class of puzzles about which T. S. Eliot (an English author who is NOT a physician) could say, — "if we can never be right, it is better that we should from time to time change our way of being wrong." . . . A direct path to a better diagnosis of any fibrous lesion is lung biopsy. All that it requires is a good chest surgeon and a pathologist who does not call 50 per cent 'negative' and 50% 'nonspecific'. The hazard is now found to be very scanty, and the hazard of not making the diagnosis may include such varied items as emphysema, cor pulmonale, suppurative bronchitis, failure to use the proper therapy, the side effects of empirical steroid therapy, etc.

If you are adding a new word to your vocabulary every day (or even once a month), try the newly popular title for tranquilizers, 'ATARACTIC'. It gives a certain dignity to a relatively new group of drugs.

'XERORADIOGRAPHY' is an even newer word. It is a new type of apparatus and technic, still being perfected, and dreamed up by the Haloid Co. of Rochester, N. Y., the Battelle Memorial Institute of Columbus Ohio, and the General Electric X-ray Dep't. of Milwaukee. . . . They proclaim that it uses no water, chemical supplies, or electric power, and the roentgenogram can be fully developed in 40 seconds. . . . The procedure is a simple one, and the results transient, since a selenium-coated metal plate is electrostatically charged before exposure to x-rays. The x-rays then partially discharge areas on the plate, in inverse proportion to the density of the object.

The latent electrostatic image is made visible by spraying with a powder. . . . After the plate is read, it can be wiped off and used again, eliminating storage. The advantages claimed may lead to its use in disasters and primitive areas.

The STAMINA OF CERTAIN SICK PEOPLE never ceases to be amazing, especially when the illness has seemed destructive and very grave, and when an interval of a dozen years has passed since hearing from the person. . . . We have just had a note from a man who had a terribly advanced infection of the lung with basal bronchi about the size of a man's glove. The sulfonamides once gave him some help, but the prospects were very bleak when he went back east. . . . Now he wonders about a return to the southwest, since "asthma and hay fever have been bothersome in recent years." . . . Such a person has certainly been quietly heroic in his small way.

"The substitution of oral
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Lawrence, W. E.; Kahn, S. S., and Riser, A. B.
South. M. J. 47:105, 1954.

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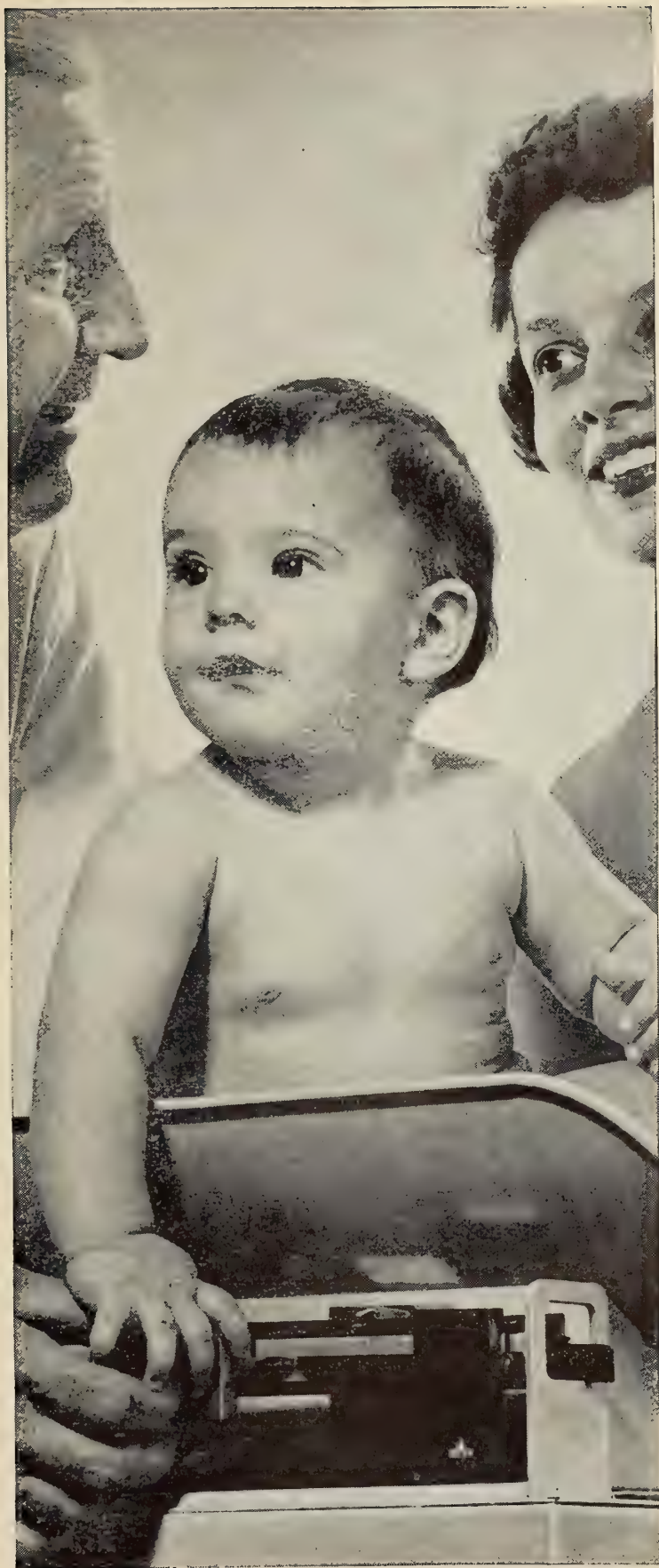
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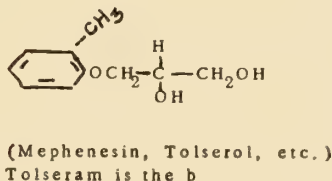
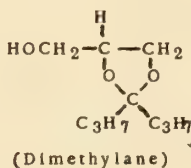
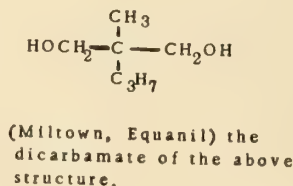
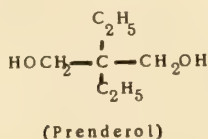
ARIZONA *Pharmaceutical* PAGE

WHAT'S IN A NAME

by Joseph A. Zapotocky, Ph. D.
Pharmacy College, University of Arizona

SHOULD a drug be more to you than just a label with which you may associate certain actions or indications for use? Does the chemical name of the drug have some meaning for you and does it enable you to classify it chemically and therapeutically? Can you compare chemically related drugs? Do you critically evaluate a drug with a new name and decide from its composition whether it is an innovation, a modification of something already on the market, or merely a new garb for an old drug?

Rarely does the average physician have time to make these distinctions. He is usually not sufficiently versed in chemical terminology to know and recognize the chemical name of the drugs he prescribes. Many manufacturers may introduce the same drugs under different titles. For example, although Mephenesin is the official name for 3-o-toloxyl-1,2-propanediol, it may appear on the market as Tolserol, Dioloxol, Lissephen, Tolulexin, Oranixon, Sinan, and other titles. If you were to receive literature on a new drug called "Nodreem" which turned out to be 3-o-toloxyl-1,2-propanediol, would you recognize it? If you received literature on a drug "Nopane" which was aminopyrine disguised as 1-phenyl-2,3-dimethyl-4-dimethylamino-5-pyrazalone, would you recognize it and know that although it is an effective analgesic it had the well known disadvantages of the coal tar analgesics?



More recently a drug appeared on the market under the names of Miltown and Equanil. Both are brands of the dicarbamate of 2-methyl-2-n-propyl-1,3-propanediol. Although it is a new drug, were you able to associate it immediately with Mephenesin? Did you notice its very close similarity to Prenderol, 2,2-diethyl-1,3-propanediol? A very close observer would have been able to include Dimethylene in the same class.

Once the relationship of the structure of these compounds is noted, then the reasons for their similarity of action begins to appear.

The majority of pharmacists do very little compounding today. But because of a longer period of education and experience they have become consultants on the thousands of drugs which they are called on to dispense. Their comprehensive and specialized knowledge of drugs can help unravel the complexities of drug terminology for the physician. This ability to recognize and classify the thousands of names already in the prescription room and the hundreds added yearly is an indispensable trait of a good pharmacist.

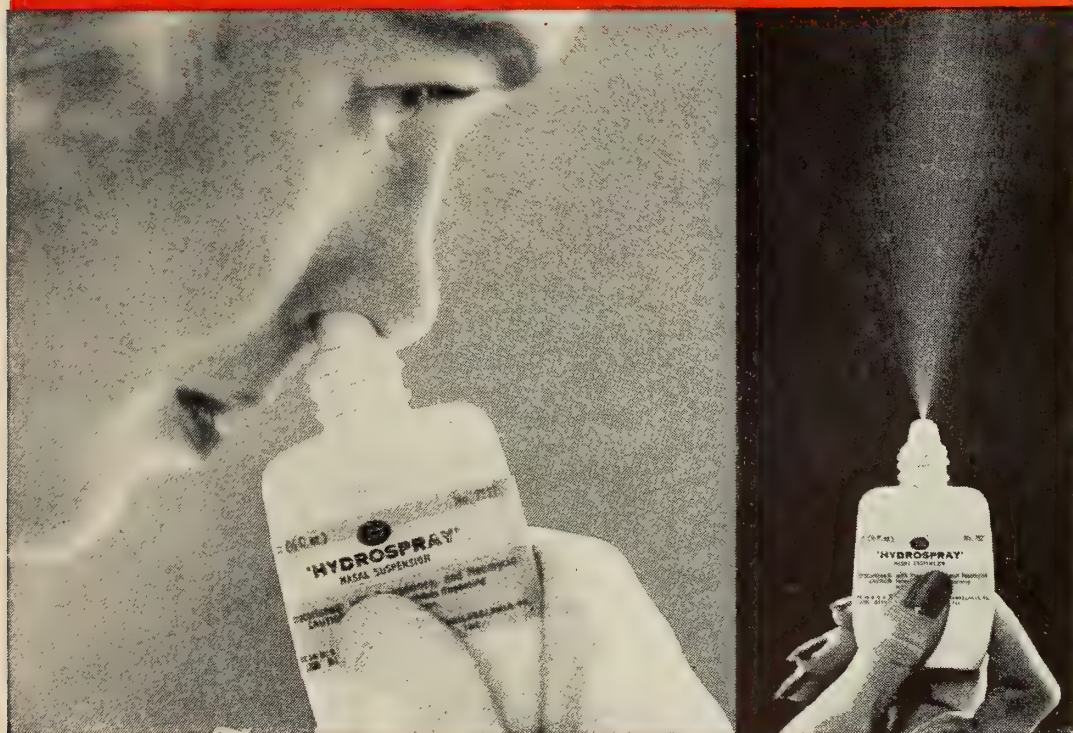
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INDICATIONS: Acute and chronic rhinitis, vasomotor rhinitis, perennial rhinitis and polyposis.

SUPPLIED: In squeezable plastic spray bottles containing 15 cc. HYDROSPRAY, each cc. supplying 1 mg. of HYDROCORTONE, 15 mg. of PROPADRINE Hydrochloride and 5 mg. of Neomycin Sulfate (equivalent to 8.5 mg. of neomycin base).



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REFERENCE: 1. Silcox, L. E., A.M.A. Arch. Otolaryng. 60:431, Oct. 1954.

Notes from the EDITORS' PEN

ARIZONA-AMEF — CONTRIBUTION

Council of your Association at a meeting held in Phoenix, November 27, 1955, directed that an amount equal to \$5.00 per active member as of January 1, 1955, be contributed by the Association out of its general fund to the American Medical Education Foundation, 50% thereof to be allocated to medical schools comprising the Western Regional Compact for Higher Education. This amounts to \$3,525.00.

The officers and directors of the American Medical Education Foundation have expressed their sincere appreciation for the generous contribution the Arizona Medical Association has made to relieve the present crisis facing the medical schools. Arizona has again demonstrated its leadership.

Schools receiving an equal share of the grant comprising the Western Regional Compact include the University of Washington Medical School, University of Utah College of Medicine, University of Oregon Medical School, University of Colorado School of Medicine, University of California at San Francisco, University of California at Los Angeles, Stanford University School of Medicine, University of Southern California School of Medicine and College of Medical Evangelists School of Medicine.

It was further stated that the other medical schools of the United States will be sincerely appreciative of their share of this generous contribution.

ELECTION ALERT — 1956

1956 is an ELECTION year that could have a great impact on the medical profession in the years ahead. You and your friends have a grave responsibility: be qualified to vote, know the issues, know the candidates' position, make up one's mind for him to vote, know when and where to vote — and VOTE!

In Arizona, Primary election is currently scheduled for Tuesday, September 11th (Arizona will elect a Senator — last day to file July 23rd); general election Tuesday, November 6th. Check up on your registration NOW.

H.R. 7225 SOCIAL SECURITY

This might be an effective approach to expressing medicine's views clearly and with brevity. Doctor George C. Lincoln, of Woodstock, Connecticut, concerned with all the implications of the proposed amendments embodied in H.R. 7225 of which you have all hear much, reached for his prescription pad and under his signature prescribed the following:

"Rx One vote against Bill H.R. 7225

"Sig: Take as often as necessary to prevent economic indigestion and other dire effects should the Bill be passed.

"Prescription may be refilled and also given to friends."

The "prescription pad" could be a most unique courier, similarly used, to impress OUR Congressmen of medicine's views on important legislation, such as H.R. 7225. Let's try it on our Senators. It may make Arizona healthier for them.

HILL-BURTON GRANTS

The Department of Health, Education and Welfare reports that as of December 31, 1955, Hill-Burton grants completed and in operation in Arizona include 15 projects at a total cost of \$12,050,437, (federal contribution included \$3,650,050) supplying 884 additional beds. Under construction is one project of a total cost of \$102,739 (including federal contribution of \$51,369). Approved but not yet under construction are five projects at a total cost of \$2,018,960 (including federal contribution of \$771,500) designed to supply 30 additional beds. In December 1955, two projects were approved. St. Joseph's Nurse Training School, Phoenix, total cost (estimated) \$1,075,960 (approved federal share \$300,000); and John C. Lincoln Hospital, Phoenix, estimated total cost \$140,000 (approved federal share \$70,000) designed to supply ten additional beds.

ANNUAL MEETING

Remember the date — April 25 through 28, 1956; the place — Chandler, Arizona — San Marcos Hotel; and a GOOD TIME to be had. Make your ROOM RESERVATIONS now and count upon being present.

AMERICAN CANCER SOCIETY

The Arizona Division of the American Cancer Society has just completed its Fourth Annual Cancer Seminar in Phoenix at the Paradise Inn. For the second year we commend this organization on the presentation of this excellent and instructive program. The faculty that has been made available to the local men has been superior. It was surprising to see a number of them return in this capacity. Their presentations were stimulating but a great variety of view-

points might prove helpful. An unusual aspect of the session was the consideration given to the mental status of the cancer patient and the doctor.

We would like to congratulate the Arizona Division of the American Cancer Society and Drs. Bregman and Barger in particular for their efforts in establishing these postgraduate courses and encourage them to continue their program in the coming years.

The registration at the past meeting was approximately 350 doctors. The attendance included many more when one considers Technicians and Nurses. However, of the 800 doctors in our state there were less than 200 registrations from Arizona. This program is worthy of the consideration of all the doctors of Arizona in the future.

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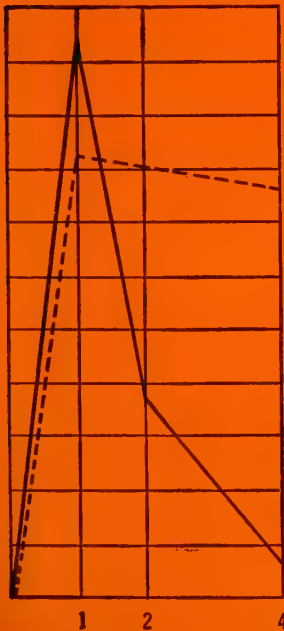
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Organization PAGE

CIVICS

Norman Ross, M.D.

WE'VE BEEN PLEDGED

(Arizona Medicine Organization Page,
November, 1955)

The Governor's Arizona Mental Health Research Committee met with its Advisory Committee and the Committee of the University and Colleges for Mental Health Research for the State of Arizona, on January 28, 1956. Following the welcoming address by Governor Ernest W. McFarland, Dr. C. H. Hardin Branch, Head of the Department of Psychiatry, University of Utah Medical School, and Project Administrator for WICHIE (Western Interstate Commission for Higher Education), the designated Western Regional Survey Agency for the Council of State Governments to conduct an area survey of the Mental Health Training, Research, and Prevention, was introduced by D. W. Melick, M.D., Secretary of the Arizona State Medical Association and Secretary of the Arizona Division of the Western Interstate Commission for Higher Education.

Dr. Branch's address is an excellent explanation of these regional mental health surveys and mimeographed copies of same can be obtained on request from the Governor's Arizona Mental Health Research Committee, 620 Professional Building, Phoenix, Arizona.

When we consider that Public Law No. 182, which is a part of an intensified attack on Mental Health, was passed by the Congress of the United States without a dissenting vote, and that mental illness is termed the number one health problem by the American Medical Association Council on Mental Health, we should study both Dr. Branch's explanation and this law.

* * *

ARIZONA TUBERCULOSIS AND HEALTH ASSOCIATION, INC., 111 East Willetta Street, Phoenix, Arizona, Helen E. Watkins, Executive Director.

The annual meetings of the Arizona Tuberculosis and Health Association and the Arizona Trudeau Society will be held April 20-21, 1956 at the Hotel Adams, Phoenix.

J. Arthur Myers, M.D., Minneapolis, Minnesota, an outstanding authority on tuberculosis in children will be the banquet speaker Friday evening, April 20. He will participate in the programs the following day.

Julius L. Wilson, M.D., Director of Henry Phipps Institute, Philadelphia, and Director — American Trudeau Society — Medical Education Program — will appear at both the general session and the scientific session on Saturday afternoon, April 21.

The general sessions are open to the physicians and public. The scientific sessions, though related to tuberculosis detection, treatment and control, will present subject matter of interest to all physicians. An invitation to attend is extended to Arizona Medical Association members by the Arizona Tuberculosis and Health Association and the Trudeau Society.

* * *

MARICOPA COUNTY SOCIETY FOR CRIPPLED CHILDREN AND ADULTS, INC., 7211 North Seventh Street, Phoenix, Arizona (Easter Seal Society) LeRoy Larson, Clinical Director.

The Samuel Gompers Memorial Clinic, owned and operated by the Maricopa County Society for Crippled Children and Adults, Inc., has in cooperation with the office of Vocational Rehabilitation recently constructed an audiology center at the clinic. This center will bring to the valley the finest in the way of sound-treated rooms and equipment for the most discriminate hearing testing required and will be ready to give necessary service to the state in the very near future. Referrals for hearing evaluations can be made to the audiology center by any qualified physician and any qualified agency may feel free to avail themselves of the services of this center after preliminary testing indicates or warrants the need for further and more discriminate testing procedures.

All testing and examinations will be done on a fee basis — based upon the cost of operating the audiology center. Referrals can be made directly or through an agency contracting or using the services for their clients.

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ARIZONA MEDICAL ASSOCIATION

**65TH ANNUAL MEETING
April 25, 26, 27, 28, 1956**

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Book REVIEWS

PHYSICIAN'S FEDERAL INCOME TAX GUIDE, 1956
Edition by Campbell & Liberman Published by Channel Press,
Great Neck, New York, Price \$2.50.

THE MANY physicians who are familiar with the earlier editions of this fine book will be glad to know that the 1956 edition has just been published. Those who are not familiar with the previous edition should know that this is a book designed to aid you in assembling and evaluating the necessary information to fill out your income tax return and to aid you also in actually filling in the various sections of this rather complicated return. The various types of taxable income are treated individually and we note that over forty different types of possible non-taxable income are listed which should be of some help in keeping the physician from needlessly paying taxes on income which is not actually taxable. Various deductions are treated individually and in the arrangement of the text of this book, each paragraph dealing with a particular subject is headed by a statement printed in italics which you can readily evaluate as to pertaining to your situation or not in order that you may know whether or not it is necessary for you to read that particular paragraph. For instance one paragraph is entitled "If you incurred gambling losses during 1955, read this:". Another, "If you purchased bonds at a premium, read this:". And another, "If you receive no income from annuities or pensions in 1955 you may now skip to section 2 of this chapter:". The text is liberally illustrated with sections from a specimen report. On the outside cover is a printed guarantee that you will save sixty times the \$2.50 purchase price or your money will be refunded or if you do not chop hours off your tax return time, your money will be refunded. After looking through this well arranged booklet, I do not believe that there are going to be many takers for this guaranteed refund.

R. L. F.

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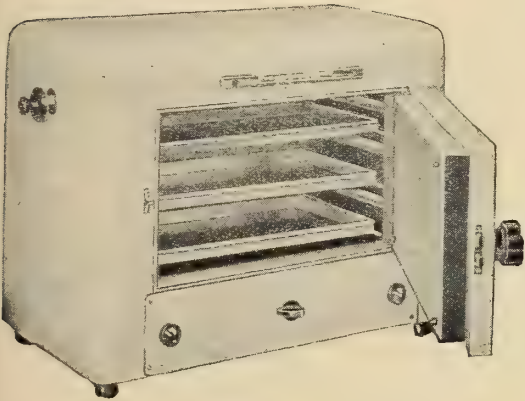
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**AUTHORITATIVE EXCERPTS FROM
LEADING MEDICAL JOURNALS**

Syringe Transmission of Infectious
Hepatitis-Cases increases from 94 to 708.
"ARIZONA STATE DEPT. OF HEALTH, 1954"

* * *

Syringes, needles and any other instruments used for the penetration of the skin should be sterilized individually, preferably by heat. . . . Sterilization in an oven or preferably by autoclaving must be done between every use of these instruments. . . . From Jour. Amr. Med. Assn. Vol. 145, Jan.-Apr., 1951.

Complete bacteriological sterility can be achieved only by sterilization in the autoclave or hot air oven. From Brit. Med. Research Council, War Memorandum No. 15.
The respective resistances to heat of the viruses of serum hepatitis and of poliomyelitis are not too dissimilar. From Pediatrics Vo. 7, February, 1951.

The safest method of sterilizing syringes and needles used for injections is either dry-sterilizing in the hot air oven for two hours at 160°C. (320°F.) or autoclaving at a temperature of 120°C. (15 to 20 lb. pressure) for 20 minutes. **BOILING IN WATER CANNOT BE RELIED ON TO DESTROY SPORES.** The hot oil method is not recommended. From Brit. Dental Journ. Vol. 92, April, 1952.

The significance of adequate sterilization is obvious. This can be accomplished **only by dry heat sterilization or autoclaving.** From New Eng. Jour. Med., July, 1948.

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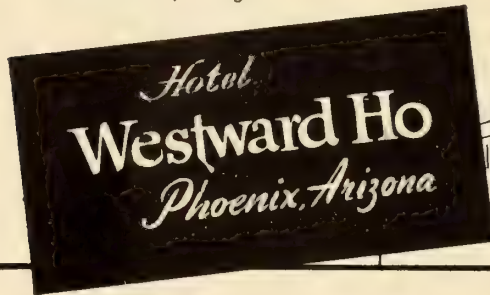
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Woman's AUXILIARY

COME TO THE CONVENTION

ON behalf of the Committee for the Twenty-sixth Annual Convention of the Woman's Auxiliary to the Arizona Medical Association, we wish to take this opportunity to urge all members to attend the meetings to be held in Chandler, at the San Marcos Hotel April 26th, 27th, 28th, 1956.

Maricopa County Woman's Auxiliary President, Mrs. George A. Williamson, and the Maricopa County members will be hosts for the guests from other counties.

State Auxiliary President, Mrs. Roy Hewitt, and her Committees have arranged a particularly interesting social and informative program.

State Convention Committee Chairmen are: Mrs. Charles L. von Pohle, Chairman, Mrs. William E. Ragsdale, Jr., Co-Chairman, Mrs. Donald Buffmire, Reservations, Mrs. Seth Douthett, Registration, Mrs. M. E. Stern, Finance, Mrs. Clifford Goodman, Transportation, Mrs. L. A. Stapley, Jr., Publicity, Mrs. Robert Delph and Mrs. Robert Erickson, Decorations, Mrs. Lloyd Kent, Courtesy.

The following tentative program has been announced by the Program Committee. A printed program will be available at the Convention.

Friday, April 27th—10:00 A.M. Formal opening of the General Session of the Auxiliary, in the Paris Lounge, San Marcos Hotel—Mrs. Roy Hewitt, President, presiding; followed at 12:30

P.M. by a luncheon in the main dining room, honoring Mrs. Mason G. Lawson of Little Rock, Arkansas, The National President of the Woman's Auxiliary to the American Medical Association, who will be the speaker.

Saturday, April 28th—10:30 A.M. Brunch and Fashion Show by SOLEDAD of Phoenix, Scottsdale and Chandler, at the Arizona Country Club, in Phoenix, followed by a short business session and installation of 1956-57 officers. The day's festivities will wind up with the State Presidents Dinner-Dance given at the San Marcos Hotel by the Doctors.

A cordial invitation is extended to wives of all doctors whether or not they are members of the Auxiliary, to attend this State Convention.

INVITATION TO CONVENTION

The 26th annual convention of The Woman's Auxiliary to the Arizona Medical Association will be held at The San Marcos Hotel, in Chandler, April 26th, 27th, 28th.

Maricopa County is the hostess Auxiliary, headed by Mrs. Charles L. von Pohle, chairman and Mrs. William E. Ragsdale, Jr., co-chairman. They and their committee have planned many social events and business sessions too.

We will be honored by having our National President, Mrs. Mason G. Lawson, of Little Rock, Arkansas, as our guest.

As your president I extend a cordial invitation to all doctor's wives in the State to attend our convention.

Irene Hewitt (Mrs. W. R.)
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| Hensing, C. R. | AL 3-6603 | 819 |
| Johnson, William J. | AL 3-1866 | 919 |
| Lee, Joseph A. | AL 4-2345 | 517 |
| Leibold, John P. | | |
| (Child only) | AL 8-3142 | 711 |
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| Pafford, Ernest M. | AL 3-3807 | 718 |
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| Oral Surgery | | |
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| Borah, Charles E. | AL 3-7414 | 814 |
| Peterson, Ralph G. | AL 2-6313 | 719 |
| Stallcup, L. B. | AL 4-3675 | 418 |
| Orthodontists | | |
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| Moffat, Richard P. | AL 4-1322 | 1017 |
| Periodontists | | |
| Burke, Wm. G. | AL 8-4644 | 818 |
| Creamer, R. Dean | AL 3-6534 | 820 |
| McGuire, Vaughn S. | AL 3-6718 | 1118 |
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|--------------------------------|-----------|------|
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| Reese, Forrest L. | AL 4-3341 | 1120 |
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| Hussong, R. W. | | |
| (Ob.G.) | AL 3-2883 | 520 |
| Matanovich, M. | | |
| (I.S.U.) | AL 3-6509 | 422 |
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| Greer, Joseph M. | AL 3-2240 | 1111 |
| Hansbro, G. L. | AL 3-8559 | 611 |
| Ovens, J. M. (Tumor). | AL 8-8074 | 608 |
| Ross, Norman A. | | |
| (Diag.) | AL 3-8353 | 810 |
| Shumway, Ord L. | AL 3-4349 | 1116 |
| Internal Medicine | | |
| Deitchman, Morris | | |
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| Gatterdam, E. A. (A). | AL 4-2174 | 910 |
| Hamer, J. D. (Ca). | AL 4-2174 | 910 |
| Hopkins, Doris F. (A). | AL 4-7509 | 402 |
| Kober, Leslie R. | AL 4-4153 | 1105 |
| McKhann, Geo. G. | AL 4-8483 | 1108 |
| Milloy, Frank J. | AL 2-0142 | 611 |
| Snyder, Bertram L. | | |
| (Chest) | AL 4-2174 | 910 |
| Swasey, Lloyd K. | | |
| (Chest) | AL 4-2174 | 910 |
| Obstetrics & Gynecology | | |
| Barker, C. J., Sr. | AL 3-2176 | 710 |
| DePinto, Angus | AL 3-9112 | 707 |
| Smith, Gregory C. | AL 3-9112 | 707 |
| Ophthalmology | | |
| Aiello, John S. | AL 3-8582 | 922 |
| Burgess, Roy E. | AL 3-5604 | 822 |
| Franklin, Henry L. | AL 4-3738 | 805 |
| French, Harry J. | AL 4-1670 | 722 |
| Harbridge, D. F. | AL 3-5604 | 822 |
| Zinn, Sheldon | AL 4-1670 | 722 |

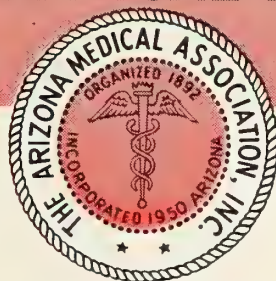
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|----------------------------------|-----------|-------|
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| Plastic & Reconstructive Surgery | | |
| Lawrence, Howard C. | AL 8-4101 | 709 |
| Proctology | | |
| Jenkins, James T. | AL 2-2822 | 903 |
| Meyer, Wallace M. | AL 2-2822 | 903 |
| Psychiatry & Neurology | | |
| Barrett, Robert S. | AL 3-1491 | 606 |
| Kowlski, L. J. | AL 4-2850 | 906 |
| McGrath, Wm. Bede. | AL 3-5559 | 811 |
| Radiology & Pathology | | |
| Foster, R. Lee | AL 3-4105 | 507 |
| Kennedy, John W. | AL 3-4105 | 507 |
| Watkins, W. W. | AL 3-4105 | 507 |
| Thoracic Surgery | | |
| Melick, Dermont W. | AL 4-3146 | 1005 |
| Urology | | |
| Faulkner, James W. | AL 8-6884 | 808 |
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| Other | | |
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ARIZONA MEDICINE

Journal of ARIZONA MEDICAL ASSOCIATION

VOL. 13, NO. 4



APRIL, 1956

TABLE OF CONTENTS

OFFICERS

| | |
|--|-----|
| ARIZONA MEDICAL ASSOCIATION, INC., DIRECTORY | 6A |
| WOMAN'S AUXILIARY DIRECTORY | 6A |
| ADVERTISERS DIRECTORY | 35A |

ORIGINAL ARTICLES

| | |
|--|-----|
| PROBLEMS IN BILIARY TRACT SURGERY | 125 |
| Walter M. Kearns, Jr., M.D., Canoga Park, California | |
| THE TREATMENT AND CARE OF THE LONG-LIVED PATIENT | 128 |
| James J. Waring, M.D., Denver, Colorado | |
| COCCIDIOIDOMYCOSIS LOCALIZED TO THE THORACIC SPINAL CORD AND BRAIN, WITH A PLEA FOR EARLY DIAGNOSIS | 131 |
| M. Leonard Gottlieb, M.D., Whipple, Arizona | |
| TONGUE TIE SPEECH | 139 |
| Robert N. Plummer, Ph.D., Phoenix, Arizona | |

MEDICAL PROBLEMS

| | |
|---|-----|
| PHOENIX CLINICAL CLUB | 142 |
| Paul B. Jarrett, M.D., Phoenix, Arizona | |

THE PRESIDENT'S PAGE

| | |
|---|-----|
| AN INVITATION | 150 |
| Harry E. Thompson, M.D., President, Arizona Medical Association | |

EDITORIAL

| | |
|-----------------------------|-----|
| "LIKE YOUR DOCTOR?" | 151 |
| LETTERS TO THE EDITOR | 151 |

TOPICS OF CURRENT MEDICAL INTEREST

| | |
|---|-----|
| RX., DX., AND DRS. | 155 |
| Guillermo Osler, M.D. | |
| ORGANIZATION PAGE — Civics | 158 |
| Norman Ross, M.D. | |
| OPEN LETTER TO THE NATION'S DOCTORS | 162 |
| A LIGHTER TAX BURDEN FOR THE YOUNG | 162 |
| IN MEMORIAM — Virgil Guy Presson | 164 |
| BOOK REVIEWS | 164 |

WOMAN'S AUXILIARY

| | |
|---|-----|
| ALLIED MEDICAL SERVICE RECRUITMENT IN MARICOPA COUNTY | 160 |
| Mrs. (C. W.) Mary Anne Johnson, Chairman | |

DIRECTORY

| | |
|----------------------------|-----|
| LABORATORIES | 29A |
| DRUGGISTS DIRECTORY | 31A |
| SANATORIUM DIRECTORY | 34A |
| PHYSICIANS DIRECTORY | 37A |

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Original ARTICLES

PROBLEMS IN BILIARY TRACT SURGERY

An Analysis Of 31 Difficult Cases

Walter M. Kearns, Jr., M.S., M.D.

Canoga Park, California

THIS report summarizes the biliary tract surgery performed at the United States Indian Service Hospital in Phoenix, Arizona, in a 12 month period from July 1953 to August 1954. The series is of interest to surgeons because it consists almost entirely of difficult problems.

The patients are 31 Arizona Indians whose advanced disease merited a referral to the Phoenix Medical Center from the Papago, Pima, Maricopa, Colorado River, and Apache Indian reservations. They represent only a fraction of the known victims of gallbladder disease among a group of people with an inordinately high incidence of biliary tract disease.

There were 28 patients with benign calculous disease, two with carcinoma involving the extra hepatic biliary tract, and one with an external biliary fistula resulting from a previous operation. There were two hospital deaths (6.5%). Of the 28 with benign calculous disease, 17 (60%) were jaundiced at the time of operation, and 22 (78.9%) had exploration of the common bile duct. Table I. lists the operative procedures performed. The pathologic highlights of the series may be summarized as follows:

I. Findings at Operation

A. Common Bile Duct Stones

Thirteen of the 17 jaundiced patients were found to have stones in the common hepatic or common bile ducts. Three of the 11 non-jaundiced patients had valid indications for exploration of the common bile duct, and of these three one was found to have calculi within the duct. It is felt that cholangitis accounted for the

negative common duct explorations in the jaundiced group. One deeply jaundiced patient had abrupt cessation of pain and temperature two days before operation, indicating probable passage of an obstructing common duct stone. This patient had a negative common duct exploration.

B. Rupture of Gallbladder and Internal Biliary Fistula

One patient had a very recent fistula between the gallbladder and the common hepatic duct, and one had an old fistula between the gallbladder and the common bile duct. Both fistulae presumably originated with acute cholecystitis and a rupture of the gallbladder. The patient with the recent fistula developed obstructive jaundice when a large gallbladder stone entered the common bile duct through the fistulous tract. Another patient had a recent rupture of the gallbladder with abscess formation resulting from biliary tract obstruction due to pancreatic tumor.

C. Adhesion of Gallbladder to Common Hepatic Duct and Common Bile Duct.

This dangerous sequel to cholecystitis was seen sufficiently often to merit emphasis. In at least 5 patients there was dense fibrous post-inflammatory adherence of the gallbladder to the common hepatic duct or common bile duct. This pathologic event facilitates inadvertent excision of a portion of the main bile duct during removal of the gallbladder. Por-

tions of the wall of the gallbladder in some instances are more safely left in situ.

One patient, described below (E), apparently had inadvertent excision of a large part of the common hepatic duct along with adherent gallbladder at her first operation.

D. *Pancreatitis.*

Diffuse interstitial pancreatitis was diagnosed preoperatively on three patients. Later operation confirmed the clinical findings. One patient, a woman 67 years old, developed severe abdominal pain and shock at the White River Indian Hospital. The following day it was noted that she passed per rectum a laminated facettted biliary calculus 1.5 cm. in diameter. She improved and later operation showed gallbladder stones and a normal common duct in addition to a large indurated pancreas. Presumably common duct obstruction due to calculus played an important role in the pathogenesis of her pancreatitis.

Both of the other two patients with pancreatitis had gallstones; one had stones in the gallbladder and the common bile duct, and one had stones in the gallbladder only.

E. *External Biliary Fistula.*

A woman, 59 years old, drained bile from the wound since the day of a gallbladder operation at another hospital four months previously. Exploration revealed absence of the major portion of the common hepatic duct which had apparently been inadvertently excised. Approximately one-half centimeter of proximal hepatic duct was available for anastomosis. The distal common bile duct was deeply embedded in scar and was visualized only after retrograde catheterization through the ampulla of Vater. In a seven hour procedure, the hepatic duct was anastomosed end-to-side to the common bile duct. Since there was insufficient room in the common duct to insert a T-tube, a rubber catheter was threaded above the anastomosis for splinting purposes and was brought out of the ampulla of Vater and duodenum to outside the abdomen. She drained bile from the wound for one

week post-operatively, but then, as often happens in these cases, developed an internal biliary fistula to the duodenum. The catheter was removed from the anastomosis in two months. Ten months post-operative she was asymptomatic and had experienced no episodes of chills, fever, or jaundice.

II. Postoperative Complications

A. *Retained Common Duct Stones.*

Two patients (7%) demonstrated x-ray lucencies in the common duct on their postoperative cholangiograms. One of these patients a 32-year-old woman, was found to have a common duct filled with stones, gravel, and muddy bile at her first operation. Her tenth day postoperative cholangiogram was negative, but after two months a repeat cholangiogram showed radiolucencies in the terminal duct. For three weeks she received daily instillations of ether and alcohol without success. Re-exploration of the common duct was performed and four small stones removed. Her tenth day cholangiograms this time again showed radiolucencies in the common duct. The duct was washed for three days with hydrogen peroxide solution after which cholangiograms were negative. It is assumed that blood clots accounted for the suspicious x-ray findings and were washed out with the hydrogen peroxide irrigations.

Another woman, 24 years old, showed postoperative radiolucencies on the tenth postoperative day. This patient experienced pain when her T-tube was clamped off and it was assumed she had residual stones in the common duct. She was allowed to go home for two weeks, after which repeat cholangiograms were negative. X-rays were again negative after two and three months. Apparently the stones or blood clots finally passed through the ampulla of Vater.

B. *Postoperative Deaths.*

One death occurred in an 80-year-old, deeply jaundiced and cachectic man who was found to have carcinoma of the common bile duct with extensive liver metastases. He died of atelectasis and pneumonia on the second postoperative day.

The other death occurred in a 39-year-

old woman who went into irreversible shock two hours after operation and died seven hours after operation in spite of treatment with blood, transfusion, levo-phed, and adrenal cortical extract. Autopsy disclosed approximately 900 cc. of blood in the peritoneal cavity which had escaped from the gallbladder bed in the liver. This patient entered the hospital with marked jaundice and a prothrombin time of 24 seconds (control 14 sec.). She was prepared for three days with vitamin K, nutritional supplements and antibiotics. Cholecystectomy and choledocholithotomy were performed. Because of advanced acute and chronic inflammatory changes in the gallbladder bed, the liver parenchyma was focally lacerated in removing the gallbladder. Postoperatively, no blood at all drained from the stab wound, which complicated accurate diagnosis and treatment. It is probable that hepatic insufficiency resulting from acute biliary obstruction facilitated the development of irreversible shock in this patient.

C. *Miscellaneous Complications.*

The following major postoperative complications in this series emphasize other hazards which may accompany surgical procedures for advanced biliary tract disease:

- 1. Atelectasis and pneumonia — three patients (10%).
- 2. Pancreatic fistula — one patient (3%). This patient at operation was found to have gallbladder stones and a recently inflamed pancreas. Cholecystectomy was performed, but common duct drainage was not instituted because of anesthetic difficulties. The pancreatic fistula closed spontaneously in six weeks.
- 3. Hemorrhage from the wound — one patient (3%). A woman, 24 years old, entered with marked jaundice and was found at operation to have common duct obstruction due to calculi. Profuse postoperative wound hemorrhage stopped spontaneously within twelve hours, but 2.5 liters of whole blood were required to control shock.
- 4. Subhepatic abscess — one patient

(3%). This complication followed re-operation for retained common duct stones in a woman 35 years old. The abscess drained spontaneously through the operative wound.

5. Brachial plexus injury — one patient (3%). Presumably this complication resulted from trauma to the brachial plexus due to extrinsic pressure or arm positioning while on the operating table. It occurred in a 17-year-old girl who had calculi in the gallbladder and common bile ducts, and a recent history of acute pancreatitis. There were pain, tenderness, swelling, and weakness of the hand and forearm. The disability gradually improved over a twelve-month period.

SUMMARY

A review of 31 consecutive operations for biliary tract disease performed at the Phoenix Medical Center, B.I.A., in Phoenix, Arizona, is given. The series consists almost entirely of cases of advanced biliary tract disease. Pathologic highlights such as common duct stones, rupture of gallbladder, adherence of gallbladder to bile ducts, pancreatitis, and postoperative external biliary fistula are discussed. Postoperative complications and hospital deaths are described. The common bile duct was explored in 79% of the cases of benign calculous disease. There was a hospital mortality rate of 6%.

TABLE I.

Operative Procedures*

| | | |
|--|----------|-------------|
| I. Benign disease — 29 patients, 31 operations | | |
| Operation | Jaundice | No Jaundice |
| Cholecystectomy | 17 | 11 |
| Cholecystostomy | 1 | 1 |
| Choledocholithotomy | 14 | 1 |
| Choledochostomy | 19 | 3 |
| Choledochotomy | | 2 |
| Choledochal Anastomosis | | 1 |
| II. Malignant disease — 2 patients, 2 operations | | |
| Operation | Jaundice | No Jaundice |
| Cholecystostomy | 2 | |

*The operations were performed by Dr. W. M. Kearns, Jr. (formerly Sr. Asst. Surgeon, U. S. Public Health Service) and by Dr. H. G. Williams, Phoenix, Arizona.

THE TREATMENT AND CARE OF THE LONG-LIVED PATIENT

James J. Waring, M.D., M.A.C.P.*
Denver, Colorado

SOME 30 years ago, in some fear and trembling I went to call upon an elderly gentleman to tell him I wanted to marry his daughter and that she had consented. I then timidly suggested that he might have some questions to ask me! To my relief, should I say, he replied he had none! I then told him I had come West with pulmonary tuberculosis some 15 years previously. To which he replied, "That's nothing! I came to Colorado 60 years ago with tuberculosis." This Grand Old Man died just under age 99 from non-tuberculous causes! He came in his 30's and died in his 90's! Doubtless some credit should be given his forebears and his regular life. Each year for the last 25 years of his life on November 1 he left Denver headed for Coronado and on April 1 he headed back. A long-lived patient!

Let me repeat what I said Thursday. In 1924 the median age at death from tuberculosis was 33 years; in 1950 it was 50 years. Half of all deaths from tuberculosis in this country are in men 40 years and older. David Smith says the seed-bed of future crops of tuberculosis is in the tuberculosis man over 40 and the tuberculous woman over 60. I suggest that perhaps it would be better to say the seed-bed of future crops of tuberculosis is the unrecognized tuberculous man over 40 and the unrecognized tuberculous woman over 60.

Where do these elderly patients come from? In childhood we wanted to know where the babies came from.

1. Without doubt some like myself have made excellent recoveries, reached the scriptural age of three score years and ten and will probably die of non-tuberculosis causes, from coronary accidents or traffic accidents. Some of us have had our ups and downs, our minor recognized relapses or doubtless very ephemeral unrecognized relapses. Without doubt timely administration of chemotherapy will minimize the damage done by these relapses!

Some patients, after far advanced disease, have survived without surgery or chemotherapy with deformed thorax and distorted mediastinum. Their faces are florid, they are somewhat short of breath, they breathe conspicuously asym-

metrically, they still play a little golf, they wheeze and have a loose cough but you can examine sputum till the cows come home and you won't find a red bug in it. These chaps will not die of tuberculosis. Paradoxically, they will die because they have recovered from their tuberculosis with severely damaged lungs. They die eventually of right heart failure! These patients learned their limitations early and survived because they kept within them!

Last year I saw a man some 50 years of age. He came to Colorado 30 years ago for his health. Despite severe pulmonary tuberculosis and complicating genito-urinary tuberculosis, he made a nice recovery and has been at work and without symptoms for over 25 years. This chap is a very intelligent, cooperative fellow. Twice a year he sees his doctor for x-ray of his chest and culture of gastric washings. This man was sent to me in consultation by his family physician because he had turned up at long last with a positive culture. He had no significant symptoms, no cough, no complaint. Physical examination and x-ray showed honey-combed upper lobes. Except for some shrinkage of his upper lobes, I saw no important change in his x-rays over the past 15 years. Without giving the full story, I showed his most recent picture to a group of young doctors with request for recommendations. Half of them thought he ought to have bilateral upper lobectomy and the other half thought he ought to have bilateral thoracoplasty. What did he get? He got reassurance, he got continued close observation, he got chemotherapy on an ambulatory basis, he got permission to continue at work, he got admonition as to care of cough and sputum if any at any time at home and abroad. I am glad to say he has since remained well and subsequent cultures have been negative.

2. Let us turn to another group of these older patients. I prefer to the "good chronies." These patients offer a more serious public health problem because unlike the former patients who shed only a rare tubercle bacillus, these have almost constantly a positive sputum. They are a menace at home and away from home. They are in constant danger of hemorrhage and more or less severe febrile episodes and dreaded

*Presented before the California Tuberculosis & Health Association meeting at Los Angeles, Calif., March 19, 1955.

extra-thoracic complications. Dr. Edward L. Trudeau was such a patient. Will chemotherapy cure these patients? If not will it convert a communicable disease into a non-communicable disease? In other words, will the patient continue to spit tubercle bacilli that are pathogenic or non-pathogenic for human beings? A wisely planned and skillfully executed campaign of chemotherapy, bed rest and surgery may reduce the personal risk and the public health menace of these patients.

3. Then there is the elderly person who comes down with active pulmonary tuberculosis apparently but perhaps not really for the first time. Is this the lighting up of an infection acquired many years previously, say in childhood or more recently? Is it an exogenous reinfection? If his tuberculin test has been known to be positive for years these are probabilities. If his tuberculin test has recently converted from negative to positive, then the issues are clean cut. Where did he get it? Study all his contacts at home and abroad. Has he already infected members of his family? All should be tuberculin tested and preferably all x-rayed, certainly all positive reactors.

Something more needs to be said about endogenous exacerbation and exogenous reinfection! I hope I made it clear that although a significant amount of clinically active tuberculosis appears within a year or two after conversion of the tuberculin test, active disease can appear anytime after infection has taken place. A long latent period is more common than a short one! We just have to match the Bug's patience and persistence with eternal vigilance!

By exogenous reinfection, we mean a person who has had active disease and perhaps successfully recovered, but later, from contact with another open case gets a fresh or new infection. Pathologists have gathered adequate evidence that this does occur. How often is more difficult to answer! A few interesting cases are recorded where, without the melancholy assistance of the post mortem examiner, we can be sure that reinfection did take place. For example a number of cases are on record with infection and reinfection due on the one hand to the bovine and on the other to the human bacilli. These organisms, as you know, can be reliably distinguished from each other. The BCG organism is a bovine bacillus. Vaccination with it gives only a measure of acquired resistance. Vac-

inated persons have later developed active tuberculosis from a human bacillus! More recently Dr. Roger Mitchell told me of three patients formerly treated without chemotherapy at Trudeau with recovery and later relapse. The tubercle bacillus now appearing in the sputum of these cases was streptomycin resistant. The significance of this is simply that streptomycin resistant organisms are extremely rarely ever found in patients not treated with this drug. One of the patients was a doctor! The deduction is obvious: The doctor recovered from his first infection, evidently got a reinfection with a streptomycin resistant organism from one of his patients who had had chemotherapy. This again means that the immunity acquired by the first engagement with the tubercle bacillus was only a relative affair and could be overcome by circumstances favorable to a new infection.

4. Then, we have the battle-torn Respiratory Cripple! He would have been dead long since but for our good colleagues, the thoracic surgeons! A bit of rib here and a bit of lung there! One of the ablest of the British surgeons calls it Demolition Squad work! "The lungs," he says, "have been shot to pieces! We surgeons come in as the Demolition Squad to tidy up! To salvage what we can of life and able-bodiedness." As long as we have to contend with this communicable disease, tuberculosis, we will have patients who can be saved by the surgeon after more or less formidable surgical procedures plus chemotherapy. With diminishing prevalence of the disease and with earlier diagnosis and earlier and improved chemotherapy, the need for radical surgery will diminish!

In more precise terms, something now needs to be said about the management of the elderly man and the elderly woman with active pulmonary tuberculosis. The man between 40 and 50 doubtless will have important business responsibilities. He will want to defer doing the right thing. He is used to giving orders and not to taking them. He will resent giving up his golf! He may be proud and a bit stiff-necked and won't like it when you insist that all his office force should have tuberculin tests and x-rays. His wife, his children, his parents, his cook, his maid, his chauffeur, his whole "blooming" household must be checked.

This reminds me that some years ago when my two daughters were youngsters, we had to get a new nurse maid. I had always warned

my wife to inquire carefully of employment agencies and employees themselves about state of health especially about lung trouble. On this particular occasion the very first day we had this new maid, I interrogated her myself about her health. Not satisfied with either her replies or her appearance, I insisted upon examining her chest. Very reluctantly she consented and I found she had far advanced tuberculosis!

What about the woman past 60 found with a diagnosis of active pulmonary tuberculosis. I think she may be more cooperative about keeping quiet. If well-to-do, she could be cared for in her own home and help secured to relieve her of household responsibilities. If such help is not possible, she should go to a sanatorium.

Streptomycin must be given to these elderly patients with caution. Careful appraisal of renal function is wise. Damage to the eighth nerve, whether to the vestibular or auditory branches is serious at any age but uncertain gate and unsteady footing is a hazard anyhow of advanced ages and should not be aggravated, if avoidable. My inclination would be to use INH and PAS! It is quite possible some of these patients will need chemotherapy indefinitely.

Prolonged rest in bed is not desirable for the elderly. They lose strength rapidly and after getting up recover strength slowly. This is bad for their morale! Fortunately today rigid bed rest does not seem to be as important as in pre-chemotherapy days.

As to surgery, many of these "long-lived" patients had surgery in younger days. At any age, but particularly in the patient past middle age, arrest of disease with preservation of every possible bit of pulmonary function is important. Some of these patients will be much more

comfortable at sea-level, say somewhere in California than at Denver's altitude. This comment applies not only to the patient who has had radical surgery but to the patient who has made a nice recovery without surgery from far-advanced disease and is left with much fibrosis, distorted mediastinum and possibly pleural symphysis.

Now, I realize that much of what I have said is applicable to the long-lived or elderly patient on the private patient status. It is entirely possible that some part if not all of some of our tuberculosis sanatoria may be converted so to speak into "old soldiers homes," the inmates being the more or less indigent "tee-bee" battle scarred veterans, some with unhealed wounds made by disease and not bullets or scalpels, some respiratory cripples constantly under suspicion of shedding bacilli from time to time, other, to mix metaphors, where wounds are only "last years bird nests" from which the tubercle birds have long since flown. The institutional problem of taking care of these elderly, some perhaps senile, persons with careless habits of hygiene may be very formidable.

In summary, I have tried to point out some of the problems of taking care of the long-lived patient. I have indicated that this person cannot be readily cataloged. With the increase in elderly persons in the population and the shift in tuberculosis deaths to advanced ages, we must be constantly alert to find these patients. Finally, as long as we have any tuberculosis we will have Demolition Squad Work — salvage of the far-advanced case, but by all possible means we must continue to attack this problem of far-advanced tuberculosis by search for the early case and hope that prompt treatment with chemotherapy will prevent advanced disease.



COCCIDIOIDOMYCOSIS LOCALIZED TO THE THORACIC SPINAL CORD AND BRAIN, WITH A PLEA FOR EARLY DIAGNOSIS

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IN view of the increasing number of systemic fungus infections being recognized at the present time, and with the hope of elevating the "index of suspicion" of mycotic diseases in general, this case is being presented. It is possible that intensive antibiotic therapy given to so many of our population may enhance the pathogenicity of pre-existing fungi with the subsequent development of systemic fungus disease. It is the author's opinion that, after carefully reviewing the literature, certain diagnostic criteria may be suggested which will aid in the early diagnosis of this disease. There are important military considerations involved as well, because of the large number of military personnel in endemic areas.

Since Wernicke(1) and Posadas(2) described in 1892 the case of the Brazilian soldier affected with *Coccidioides immitis*, a voluminous current literature has developed on this subject. However, cases of coccidioides localized in the spinal cord are extremely rare, and an intensive search of the literature has disclosed very few reported cases. Rand(3) reported two cases simulating cord tumor. Dr. Charles E. Smith, in a personal communication, stated that he had known of only two cases of cord coccidioides involvement with no other demonstrable lesions. Rosow and Raney(4) published a case in which the coccidioidal granuloma extended from the cerebellum to the cauda equina with a complete spinal block, positive Queckenstedt, parietic type of colloidal gold curve, and a very yellow spinal fluid which coagulated in the test tube. At autopsy the kidneys and adrenals presented yellowish granulation tissue besides the collar-like mass about the cord. The significance of the "urine-like" spinal fluid and the yellowish color of the granulation tissue will be further re-emphasized and is probably very important diagnostically. It is now well established by Smith(5) that coccidioidomycosis is endemic in certain regions of the west and southwest. This fungus disease is caused by *Coccidioides immi-*

tis. Gifford and Dixon(6) have shown that *Coccidioides immitis* also caused an endemic form of this disease observed in the San Joaquin Valley of California, known as "Valley Fever," as well as producing the disseminated type, which we now consider to be a coccidioidal granuloma.

The parasitic phase of the organism appears microscopically as distinctively double refractile spherules containing endospores. The spherules rupture and produce the granulomatous lesions, which are characteristic of the disease. Infection takes place in the human by inhalation of the arthrospores into the pulmonary system. Outside the host, the parasites exist in the mycelial phase, which consists of arthrospores which are rectangular, ellipsoidal, or spherical in shape. Fiese(7) et al demonstrated mycelial forms of *C. immitis* in the sputum of four cases with coccidioidal cavities of the lung with the aid of the Hotchkiss-McManus stain or fountain pen ink. Emmons(8) has demonstrated that desert rodents are frequently a reservoir of infection. Some laboratory workers have become infected by inhalation of the arthrospores. According to Norman and Lawler(9) the disseminated form, or the granulomatous type, occurs in only about 1 to 400 cases. It is a peculiar fact that this dissemination occurs much more frequently in the Negro race, and the pulmonary type of coccidioidomycosis can resemble tuberculosis, torulosis, histoplasmosis, actinomycosis, pulmonary neoplasm, and bacterial disease of the lung. Forbus(10) states that the central nervous system involvement can masquerade as cord tumor, meningitis, encephalitis, neoplasm of the brain, tuberculous meningitis, etc.

Carter(11) noted that mediastinal involvement is frequent in coccidioides, and is not common in blastomycosis. Smith (12) believes that a positive skin test to coccidioides can be interpreted as manifesting past or present infection with coccidioidomycosis; however, in the disseminated form, the skin test may not always be positive. Ordinarily a strength of 1-100 of

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coccidioidin is employed, but in patients who present manifestations of allergy (5% of the cases) such as erythema nodosa, or erythema indurata, it is safer to use greater dilutions of 1-1000 of coccidioidin to 1-10,000, the test being read in 24-48 hours. Emmons (13) has demonstrated that cross reactions may occur with histoplasmin and blastomycin as well, therefore indicating that the skin tests derived from fungi are not always specific. Another portal of entry of the coccidioides may be through abrasions of the skin as in Rosow and Raney's (4) case, which was through a lesion in the nares. In approximately 60% of the coccidioidomycosis the symptoms may be entirely absent in this originally infected stage. Smith (12) has stressed the fact that pulmonary lesions are not indicative of dissemination, but pulmonary cavitation always seems to be associated with resistance to dissemination, and the granulomatous type of this infection is rarely found associated with pulmonary cavitation, a very significant clinical fact. Pathological changes of the disseminated form are granulomatous in nature, and the mortality rate of this type is usually in the neighborhood of 50%. Rosen and Belber (14) published a case of coccidioidal meningitis, who lived for 4 years and 8 months, and then death ensued. Autopsy revealed a very striking similarity with the patient which is being presented in this paper. It is unfortunate that their patient did not have a definitive diagnosis until the 5th year of illness. This diagnostic shortcoming occurs only too frequently in hospital practice, for the index of suspicion regarding fungus disease is still much too low. In their patient, of the 12 spinal taps performed, the spinal fluid was xanthochromic in 9 instances, and the total spinal fluid protein on 2 occasions was 720 mgm. % and 10,090 mgm. %, indicating that the color of the spinal fluid is not due entirely to the level of spinal fluid protein, but is caused by some other factor hitherto undescribed and not recognized. I regard this to be of diagnostic importance in the spinal fluid of fungus infections, for this yellow color is quite characteristic of *Cryptococcus neoformans* as well as coccidioides. Our case also manifested a strongly paretic gold curve in all the spinal fluid examinations obtained by lumbar tap from below. Smith (15) stressed the importance of this finding as a diagnostic clue in coccidioides of the central nervous system. The paretic gold curve

was found in Rosow and Raney's (4) case as well. In the case of Rosen and Belber, (14) the highest spinal fluid protein was 10,090 mgm. %, and in our patient the highest spinal fluid protein was 12,000 mgm. %. Unfortunately the clinical impression in our patient was extremely suggestive of spinal cord tumor, and the first two spinal taps performed were not cultured. This diagnostic error has occurred many times in the past in various hospital centers. Our patient gave no definite history of pulmonary infec-

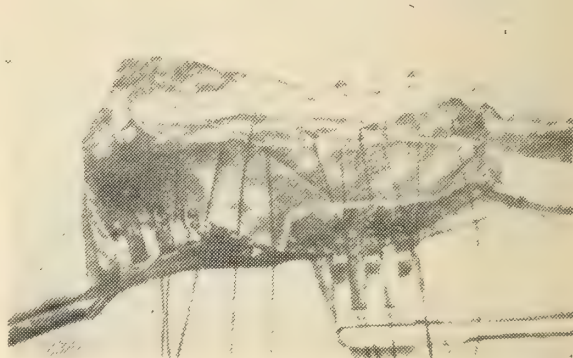


Fig. 1. Picture of exposed thoracic cord taken during surgery showing the marked thickening of the dura and arachnoid encircling the cord like a "cuff".



Fig. 2. Low power cotton blue preparation of *Coccidioides immitis* showing segmentation of hyphae into arthrospores.

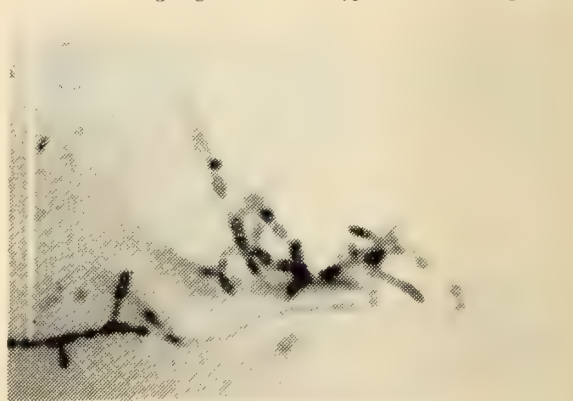


Fig. 3. High power (600x) cotton blue preparation of *Coccidioides immitis* showing segmentation of hyphae into arthrospores.

tion, no history of erythema nodosum, and had no meningeal signs or symptoms until shortly before death. He did reside in Arizona and California for two years prior to admission to the Hospital.

Literally, a "United Nations" of therapeutic agents has been employed in the treatment of this disease, including copper, arsenic, gold, bismuth, acroflavin, guinacrine, gentian violet, alkalis emetine iodides and the like. X-ray therapy, avccines, sulfonamides, antibiotics such as penicillin, streptomycin and aureomycin have also been used, and in most instances have been found ineffective. Snapper(16) et al recently reported some benefit with 2-Hydroxystilbamine in seven disseminated cases with five cases showing a favorable response. Jenkins and Postlewaite(17) reported four cases of coccidioidal meningitis from the Veterans Administration Hospital of McKinney, Texas, with three deaths and one apparent recovery. The patient who recovered received the fungicide actidione.* This antibiotic, actidione*, has very strong fungicidal effects, especially against torulosis in vitro. It is a diketone produced by an actinomyces originally found in an extract of streptomyces griseus. The author has seen considerable therapeutic benefit with this antibiotic, actidione*, in treating a case of cryptococcus neoformans meningitis. This case was reported by Wilson and Duryea(18). Another patient with coccidioides treated with actidione* had a three-year period of survival. This case was somewhat unusual in that dissemination of the coccidioidomycosis apparently followed cavitory pulmonary disease. Rand(3) published two cases of coccidioidal granuloma simulating tumor of the spinal cord. Both of his patients presented symptoms of pulmonary infection, the lesion first appeared in the lungs, giving rise to a picture simulating tuberculosis. The first case developed a coccidioidal granuloma at the level of the sixth dorsal vertebra, simulating spinal cord tumor. An extra-dural granuloma penetrating the thoracic cavity was removed at operation with apparent recovery. This patient resided in California. He developed a spastic gait in both lower extremities, paraplegia and showed considerable atrophy of both legs. The upper extremities were normal. He also had complete loss of all forms of sensation below the lesion. Abdominal and epigastric reflexes were absent. Biceps, triceps, radial and finger

jerk were normal. Knee jerks were tremendously exaggerated with bilateral Babinski's and ankle clonus. Spinal fluid examination revealed clear fluid under low pressure. Queckenstedt test showed a partial block. The preoperative diagnosis was a tumor of the ninth dorsal cord segment. At operation an extra-dural, reddish-grey, soft, non-encapsulated tumor mass was found to be adherent to the dura, looking grossly like a sarcoma. The mass was removed piecemeal, and frozen section showed a coccidioidal granuloma. This mass extended around to the right side of the cord, going into the chest between the 5th and 6th ribs, where a pocket, approximately 5 x 5 cms. in diameter, filled with yellow caseous material was encountered and curetted out. Rand's first patient recovered completely from the paraplegia and left the hospital walking. The histologic report was typical of Coccidioides immitis. The tissue bore a remarkable resemblance to tuberculous granulation tissue. The organism was firm, with a heavy hyalin capsule and measured from 3 to 80 microns in diameter. In the tissue lesion the organisms multiplied by sporulation while in artificial culture it appeared as a mold producing an abundant mycelial growth. Rand's second patient showed a granuloma with the main lesions surrounding the cervical cord and small lesions scattered over and along the cerebellum and pons. This patient subsequently succumbed. He developed definite signs of meningeal irritation following a pulmonic onset with severe headaches, vomiting, and bilateral Babinski's were elicited. The spinal fluid was found to be straw-colored, under markedly increased pressure, 119 cells, most of which were polys. The colloidal gold curve was typically paretic, 5555555533. The second spinal fluid puncture of this patient revealed a slightly straw-colored fluid, with the same type of colloidal gold curve. This patient developed positive ankle clonus bilaterally, positive Babinski on the right, and negative on the left. He presented marked weakness of the right hand and sensory changes could not be demonstrated below the 5th cervical cord segment. Abdominal and epigastric reflexes were absent and deep reflexes had completely disappeared. He then manifested a complete flaccid quadriplegia with complete loss of all forms of sensation. At autopsy, the granuloma was found to be subdural and surrounded the cord, like a cuff. Microscopically, it showed a

typical picture of coccidioidal granuloma. There was noted a thick, tough, yellowish-grey exudate on the inferior surface, just posterior to the optic chiasma and over the pons. Exudate about the spinal cord was yellowish-grey, and tough. Spheroidal organisms of *Coccidioides immitis* were found. Many of these organisms contained endospores. The yellowish appearance of these lesions is again striking.

Forbus(10), describing granulomatous meningitis of the spinal cord, thinks that it may occur independently of the infection of the meninges. He discusses a patient who produced all the signs and symptoms of cord tumor, making necessary an exploratory laparotomy for relief of spinal cord pressure, and localized leptomeningitis was found associated with involvement of the dura, much as our patient evidenced. He further emphasized that coccidioidal meningitis may often be the only evidence of dissemination of that disease, without any localization of the primary focus of infection. It is of paramount importance to note that pathologically, the coccidioides produces a yellowish, granulomatous nodule, and it is very possible that the color of the spinal fluid is not due to the increase in the spinal fluid protein, but is actually due to a pigment produced by the coccidioides organism itself. Forbus(10) showed a beautiful colored picture of disseminated coccidioidal mycosis in the kidneys with yellowish, granulomatous nodules present in the cortex and medulla.

The case history is as follows: J. K., a 40 year old white male, WW II Veteran, was admitted to the Veterans Administration Hospital, Little Rock, Arkansas, complaining of weakness of the right lower extremity, duration about two months prior to admission. He had been working as a carpenter and painter for the past five years, the last eight months attending a watch repair school. About two months prior to admission he noted progressive weakness of the right lower extremity. This symptom was not associated with any pain in the hip joint or knee or ankle joint, and coughing, sneezing, or straining at stool did not aggravate this sensation of weakness. There was no associated headache, no history of venereal infection. The patient further stated he lost about 10 to 15 lbs. in the past six months. There was no history of any previous disease of the spinal cord or arthritis, no injury to the right lower extremity,

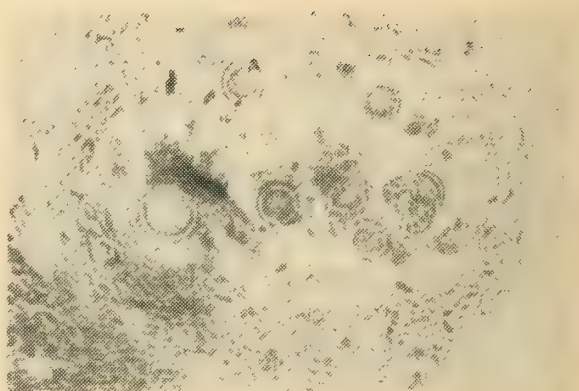


Fig. 4. Spherules of *Coccidioides immitis* in section from the dura taken at time of surgery. (475x)

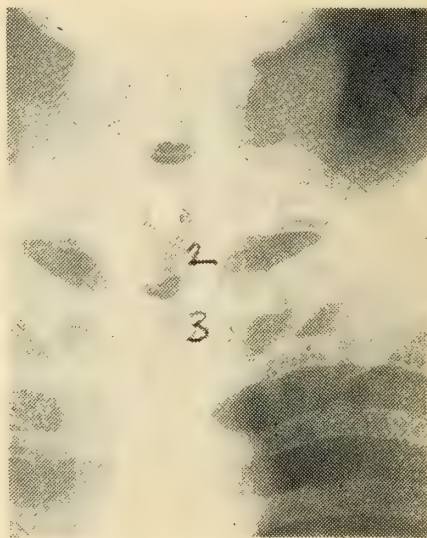


Fig. 5. Pantopaque cervical myelogram by cisternal route indicating complete irregular block at T-2.

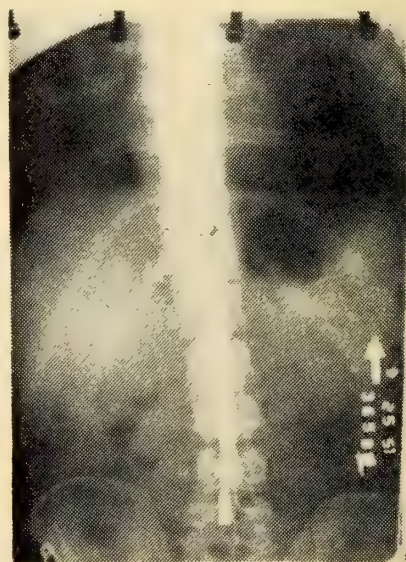


Fig. 6. Pantopaque lumbar myelogram showing complete irregular block at T-12.

no past history of any neurological disturbances. Prior to the onset of weakness of the right lower extremity, the patient believed that he had an upper respiratory infection which lasted about a week or ten days. The rest of the past history was not contributory, with the exception of the presence of bilateral renal calculi, which was demonstrated on X-ray in this hospital. He had a nephrotomy done on the right side with removal of kidney stones at the Veterans Administration Hospital in Fayetteville, Arkansas, one year prior to admission. Physical examination revealed the following pertinent facts: Temperature normal; pulse 100, regular. He did not appear acutely or chronically ill, endocrine status was normal, dental hygiene was poor, and bilateral cervical adenopathy was present, not painful. The heart and lungs revealed no abnormalities. The blood pressure was within normal limits — 110/60. There were no signs of right or left-sided heart failure. The liver and spleen could not be felt. Bilateral axillary adenopathy was noted. Neurological examination revealed the following findings: The patient seemed somewhat apprehensive, walked with a very wide base, and a positive Romberg was present. Cranial nerves were grossly negative. There was marked hyperreflexia in both lower extremities, bilateral exhaustible ankle clonus, and a bilateral Babinski. Abdominal reflexes were present, but diminished. Cremasterics were active. Reflexes in the upper extremities were hyperactive. No sensory disturbances were demonstrable at this time, and no localized tenderness over the spine. A coarse tremor was present in both upper extremities. Apparently there was no marked loss of strength although there was some suggestion of atrophy of the muscles of the right thigh and of both extremities below the knees. There was no evidence of any arthritic condition. Examination of the eyegrounds was normal. Laboratory data revealed the following: White count on admission was normal with a normal differential, 2 eosinophils were noted, red count 5,250,000, hemoglobin 15 gms., sedimentation rate 30. Urine analysis revealed 1 plus albumin and 20-30 white blood cells. During the early course of the disease the sedimentation rate remained persistently elevated, varying between 30 and 50, and subsequently approached normal values. The first spinal tap, four days after admission, revealed the pressure to be low, 8 cm. of water,

the fluid being grossly xanthochromic — it resembled urine, and a negative Queckenstedt was present. Examination of this spinal fluid showed a sugar of 30, globulin was positive, and an extremely high total protein of 5,000 mgm.%. There were only 15 cells, and they were probably red cells. Unfortunately no culture was made of this first spinal fluid; the gold curve was 4444444444. In view of the unusually high protein it was deemed advisable to repeat the spinal tap, considering the possibility of a cord tumor or multiple myeloma. The patient's blood serology was reported as negative. Another spinal tap was performed 14 days later, showed a very low pressure of 4 cm. of water, and after coughing and straining the pressure went up to only 10 cm. of water. Queckenstedt's test was positive for when pressure was exerted to both sides of the neck, the spinal fluid pressure did not increase, but it did increase when the patient coughed or strained, indicating a complete block in the cord. The same type of yellowish, urine-like, amber colored fluid was removed. One of the internes, who was observing this tap, thought that possibly the bladder had been penetrated, for the fluid looked exactly like urine. Ten c.c. of spinal fluid was removed and sent to the laboratory for study which showed 32 mgms. of sugar with a 12,000 mgm.% protein, 75 lymphocytes, 25 polys and the same type of paretic gold curve as was noted in the first tap. The cell count in the second tap was 33 red blood cells and 111 white blood cells. About two weeks following admission the patient developed some bladder incontinence, and a retention catheter was inserted. Myelogram revealed an obstruction in the neighborhood of T-12. A cervical myelogram was performed with the following findings: A marker at the 12th dorsal vertebral segment on the right side was noted. Following the injection of pantopaque there was a bizarre collection of pantopaque at the level of the 7th cervical and 1st and 2nd thoracic vertebral bodies, and a complete obstruction was demonstrated at this level, as well as at the level of T-12, when the dye was injected from below. The roentgenologist thought that we were dealing with a very diffuse process of the thoracic spine, possibly in the nature of an obliterating arachnoiditis rather than a spinal cord tumor. Three days prior to operation the patient first experienced pain in the upper back regions

radiating down both arms and a careful neurologic examination revealed the possibility of a sensory level at this time about T-2 to T-4.

A laminectomy was done, extending through thoracic 1 and down through thoracic 6. The neurosurgeon, Dr. Robert Watson, noted a diffuse, yellow, granular infiltration encircling the whole of the exposed surface of the spinal cord over the dorsal, as well as the lateral aspect of the cord. Biopsies were taken, and the patient had a very good postoperative course. It was further observed that the underlying cord beneath the granulation tissue appeared yellow, avascular, and somewhat necrotic. The pathological report was suggestive of cryptococcus neoformans or torulosis. Following operation the ankle clonus formerly observed disappeared as well as the Babinski. Both ankle jerks and knee jerks were still hyperactive, with absence of abdominal reflexes, and the rest of the neurological examination failed to reveal any other abnormalities. Eighteen days following the first operation, the patient developed a paraplegia with flaccid paralysis of both lower extremities. Several attempts to obtain spinal fluid during this period were unsuccessful, and it was postulated that the patient had developed a complete block, the paraplegia being due to involvement of the anterior and posterior spinal arteries with a transverse myelitis produced by the granulation tissue. A retention catheter was again inserted; the patient presented no other complaints, and the physical findings were those of a paraplegia, extending from below T-1, with complete loss of motor functions. There were no meningeal signs present during the entire period of hospitalization until prior to death. Decubitus ulcers developed. When the diagnosis of cryptococcosis was suggested by the pathologist, actidione* therapy was instituted, the patient receiving 40 mgm. intravenously daily for several weeks, as well as other supportive therapy. The decubitus ulcers were treated locally with bacitracin and ultra violet and seemed to be responding to this therapy. Urosepsis was controlled by streptomycin and other antibiotics. A cisternal puncture revealed clear spinal fluid, and was sent to the laboratory for evaluation. Total protein, cell count, culture, sugar, and chlorides were within normal limits. Colloidal gold curve was normal. Prior to this first cisternal tap the patient was seen by a consultant-neurologist, who observed

the following: The cranial nerves were still within normal limits, the upper extremities motor strength was normal, coordination was normal, no disturbance in tone, no visible atrophies or fibrillations were noted. The lower extremities presented a complete flaccid paralysis beginning with the lower abdominal muscles. The reflexes were hyperactive in both arms; they were present, but not as active as formerly in the lower extremities. Cremasterics were



Fig. 7. Culture of *Coccidioides immitis* on Sabouraud's glucose agar — seven days.

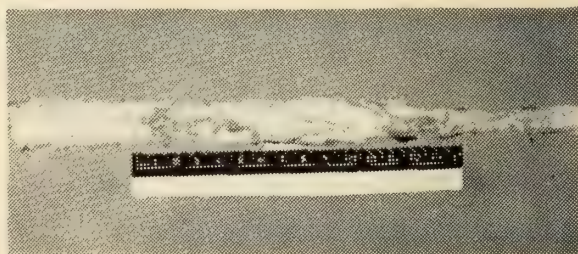


Fig. 8. Excised cord showing necrosis and marked thickening of leptomeninges.

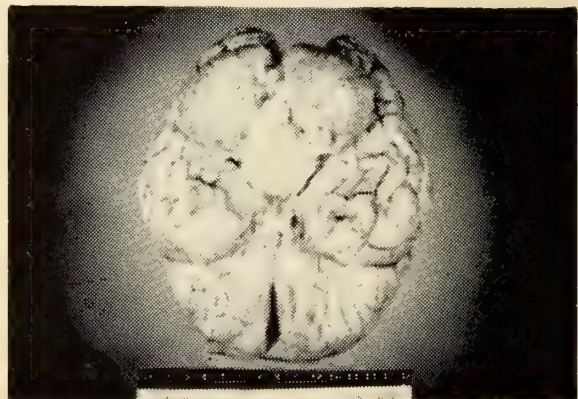


Fig. 9. Base of the brain presenting meningitis, thickened meninges and flattening of the gyri.

absent, although Babinski's persisted. No ankle clonus noted. It was impossible to elicit a mass reflex. Sensory examination revealed a level at T-2. The patient was incontinent as well. It was the neurologist's opinion that a transverse myelitis secondary to a chronic granulomatous masses produced by torula was present. He explained the change in the clinical picture in the past few weeks on the basis of occlusion of blood vessels supplying the spinal cord, with production of a transverse myelitis. The absence of the mass reflex suggested that the myelitis is not complete at the present time.

Typhoid vaccine was given, hoping that some therapeutic benefit would result from the fever, because it has been shown *in vitro* that fever will kill most of the torulae. The patient was placed in a Stryker frame because of his decubitus ulcers. A search of the literature revealed that hyaluronic acid was the substance in the capsule of the torula and hyaluronidase would possibly dissolve this substance(20), so when two cisternal taps were done subsequently, actidione* and two ampules of wydase* were injected intrathecally with no untoward effects, the theory being that if the capsule of the torula could be dissolved, the actidione* would have a more specific action. All of the spinal fluid which was removed by the cisternal route was within normal limits for protein, globulin, cell count and colloidal gold, and subsequent cultures were all negative. Entertaining the possibility that the cord could be decompressed, and the granulation tissue might also be stripped away, the patient was reoperated five months following the first surgery, and the same type of diffuse, yellow granulation infiltration throughout the whole of the exposed surface of the cord was noted. The dura was found to be about three times its normal thickness. Beneath the dura the arachnoid was markedly thickened with a whitish, yellowish, granular appearance. The thickened arachnoid varied from 1 to 3 mm. The cord appeared more necrotic and yellowed than on the previous operation. Biopsies of the dura and arachnoid and the spinal cord were taken for tissue examination and culture at this time. An attempt was made at decompression, but this was not successful, because of the nature of the granulation tissue. The dura was left open and covered with gel-foam. Wydase* and actidione* were applied locally. He received numerous blood transfu-

sions. The patient had an uneventful post-operative course. Prior to the second operation he had been receiving 1,000,000 units of penicillin daily for twelve days. The patient also was placed on an alkaline regime, taking 2 gms. of soda bicarbonate t.i.d. by mouth, as well as large doses of sodium citrate, and 3.7 gms. of soda bicarbonate intravenously on numerous occasions, for alkalization had been found to be of some value in the treatment of torulosis, according to Mosberg and Arnold(19). B₁₂ and liver were given as well. The dose of typhoid vaccine was 25,000,000 units intravenously daily for three days and was then increased to 50,000,000 units intravenously daily for two days. An electroencephalogram was taken which revealed no abnormalities. Repeated fundus examinations were persistently negative, and meningeal signs failed to develop. Typhoid vaccine was subsequently stepped up to 100,000,000 units intravenously every other day for twelve days. He also received iodides by mouth. A pathological report of the specimens taken during the second operation revealed coccidioidomycoses. Cultures were positive, as well as organisms being present in the dura and arachnoid. The bacteriological evidence was indisputable that we were dealing with coccidioidomycosis rather than torulosis. Coccidioidin skin tests in strengths of 1:100 and histoplasmin 1:100, and tuberculin in first strength were all done, and were all reported negative. Repeated X-rays of the chest and of all the long bones have all been negative. A primary focus of coccidioidomycosis could not be demonstrated. The pathological study further disclosed numerous large oval organisms measuring 24 to 30 microns in diameter, the central portion of which contained small granular appearing material which was thought to be endospores. Giant cell formation was also present. The gross specimen taken at the time of the second operation showed a markedly thickened dura as well as arachnoid which was yellowish in color, and the specimen of the spinal cord was also yellowish-white in color, with plaques about 1 mm. in diameter. Cultures of the dura and arachnoid showed *Coccidioides immitis*. The culture of the spinal cord revealed no growth. X-ray studies of the entire spine, as well as upper and lower extremities, skull, and chest were all reported as within normal limits, with the exception of the laminectomy

of the spine from T-2 to T-7. Following the second operation the patient received 100 mgms. of actidione* twice a week intravenously in 500 c.c. of saline. The streptomycin was continued in combat the genito-urinary infection, oretone 5 mgms. t.i.d. as supportive therapy to prevent osteoporosis, and bacitracin was continued locally on the decubitus ulcers which practically disappeared. Blood transfusions were given.

Complement fixation studies for coccidioides were sent to the U. S. Public Health Service in Chamblee Georgia, and were reported as being positive 1:8. Another blood specimen was sent to Dr. Charles E. Smith at the School for Public Health, University of California, and it was reported as positive in dilutions up to 1:16. Slides were also reviewed, and the coccidioides spherules were confirmed.

In spite of supportive therapy, the clinical picture became progressively worse and he succumbed about one year after admission to the hospital.

The pertinent findings on autopsy were as follows: The dura was markedly thickened, especially at the base of the brain, and in an area near the foramen magnum the leptomeninges were 6 mm. and at the thinnest point 0.5 mm. The brain weighed 1350 grams and presented flattened gyri and thickened and distended leptomeninges and, near the upper end of the spinal cord, numerous areas of focal grayish-yellow necrosis were present. Multiple coronal sections through the cerebrum revealed 2 to 5 mm. thick cortex, markedly atrophied white matter, and extremely dilated lateral 3 & 4 ventricles. Continued transverse section through the pons, cerebellum, medulla and cord revealed congested veins and marked thickening of the leptomeninges on the inferior surface in the area surrounding the cord. The spinal cord was covered with extremely thickened meninges, so that its over all width was twice the normal. At the level of the previous surgical procedure the posterior surface of the meninges is very necrotic, and at one point the cord appears to have lost all but a thin .2 mm. layer on its anterior surface due to necrosis. 2 cm. above the upper end of the surgical site the gray-white thickening in the subarachnoidal space invaded the posterior $\frac{3}{4}$ of the cord leaving only 1.5 mm. layer of tissue which resembled spinal cord on its anterior surface. No spinal fluid could be seen. Careful pathological exam-

ination of the lungs failed to reveal any primary focus of *Coccidioides immitis*. The rest of the pathological examination was non-revealing with the exception of small, sand-like calculi in the right kidney.

SUMMARY

1. Because of the increasing incidence of systemic fungus diseases, the clinician must have a "mycotic index of suspicion" in diseases of the central nervous system, along with virus, bacterial, neoplastic, and degenerative diseases.

2. The urine-like, yellowish spinal fluid with its high protein, quick coagulability, positive Queckenstedt, and paretic colloidal gold curve suggest a diagnosis of coccidioidal or cryptococcal involvement of the central nervous system.

3. Pulmonary coccidioidal cavitation is seldom followed by the disseminated type of the disease in white patients.

4. The yellowish color of the granulation tissue of coccidioides has been stressed, and it is believed to be causally related to the xanthochromic spinal fluid.

5. A positive skin test with coccidioidin merely indicates past or present infection with coccidioides. The skin test may be negative in the disseminated form. Cross reactions may occur with histoplasmin and blastomycin. The complement fixation test on blood serum is a valuable aid to the diagnosis. A rising titer denotes grave prognosis.

6. A plea for early diagnosis is being made, for prompt decompression of the cord with removal of the coccidioidal "collar-like" granulation tissue can preserve its viability and prevent paraplegia or quadriplegia.

I wish to express my appreciation to the Department of Biochemistry, and the Medical Illustration Service of the Veterans Administration Hospital, Little Rock, Arkansas, and to the Department of Pathology, University of Arkansas Medical School, for their invaluable assistance in preparing the specimens and photographs presented in this paper.

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TONGUE TIE SPEECH

Robert N. Plummer, Ph.D.*

Phoenix, Arizona

TONGUE tie speech is an articulatory failure caused by restricted vertical mobility of the tongue tip. This restriction is imposed by a lingual fraenum whose superior attachment is too near the tongue tip. The inferior attachment often is at the juncture of the alveolar process and the inferior incisors, rather than well back near the base of the tongue.

Severe tongue tie is easily discovered by mere observation of the fraenum. Determination of whether the condition is severe enough to interfere with speech can be made by having the patient open the mouth quite wide and attempt to lift the tongue tip to the alveolar process, behind the superior incisors. If this can be done with or without the aid of a tongue blade, the tip has freedom enough for normal speech. Though not tongue-tied, the child often is so insensitive to the position of his tongue that he cannot follow oral instructions for lifting it to the desired point, but can do so with assistance.

The condition of tongue tie severe enough to result in an articulatory defect is rare. In eighteen years I have seen approximately twelve such cases. We hear much about tongue tie speech, but we do so only because the term is used promiscuously. Many people label any speech disorder as "tongue-tie" because of ignorance or because the term has become a catch all for any speech failure.

In severe cases of tongue tie, only the quality of speech is disturbed. The quantity is not disturbed, and complete speech failures cannot be accounted for by this condition. The defective speech sounds involved are the dental-alveolar sounds, or those requiring that the tongue tip be elevated to the alveolar process, and most usually to a point behind the superior incisors. These sounds are "r, l, s, z, th, t, d and n." In addition, the voice is often muffled because of a close jaw position. This position keeps the tongue relatively high and compensates for the inability to elevate it when one talks with the mouth as wide as normal.

The first step in correction of tongue tie speech is surgical removal of the restriction. If delayed until after speech is fully developed, surgery must be followed by speech therapy since the patient otherwise will continue to speak defectively purely upon the basis of habit. Prognosis is good, with the length of therapy dependent upon the age of the patient. If the condition persists into adulthood, the process of correction after surgery is quite difficult and prolonged.

While most cases of tongue tie are detected and corrected at birth, the condition occasionally is found in an adult. Despite the rarity of the condition, examination of the tongue should be routine in all cases of defective speech, with surgery and speech therapy when indicated.

*Speech Pathologist.





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¹January, H. L. et al: Clinical experience with tetracycline. *Antibiotics Annual* 1954-55, p. 625.



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PHOENIX *Clinical* CLUB

The Case History in this discussion is selected from the Case Records of the Massachusetts General Hospital, and reprinted from the New England Journal of Medicine. The discussant under Differential Diagnosis is a member of the staff of the Massachusetts General Hospital. The other discussants are members of the Phoenix Clinical Club.

MASSACHUSETTS GENERAL HOSPITAL PRESENTATION OF CASE NO. 39041

A THIRTY-TWO-YEAR-OLD former miner's helper, a paraplegic, was admitted to the hospital for rehabilitation.

About ten months before entry, while bending over shoveling coal at work, the patient was struck on the small of the back by a fall of rock. He did not lose consciousness but had an immediate sensation of numbness and paralysis of both legs. He was carried face up, being held under the legs and armpits, to the shaft elevator and taken to a hospital. During the period of hospitalization he was placed on constant catheter drainage, mineral oil and enemas as needed, and given passive exercises and massage of the extremities once a day. Five months later because of persistent pain in the back, a spinal operation was performed. Casts were never used. One month later the patient began to experience crampy pains in his legs at times. A sensation of pins and needles was present in both legs for three months, but normal sensation had never returned. About two months before admission the catheter was removed, and he was permitted to void spontaneously. He was sent home at that time. For a month before admission he had ankle edema and erythema. Two weeks before entry he had a one-day episode of "cold in the kidney" associated with steady left-sided pain, and on the next day he passed bloody urine. No further hematuria occurred, however.

The patient had always been in good health before the accident except for a bout of malaria in the Philippines seven years before admission.

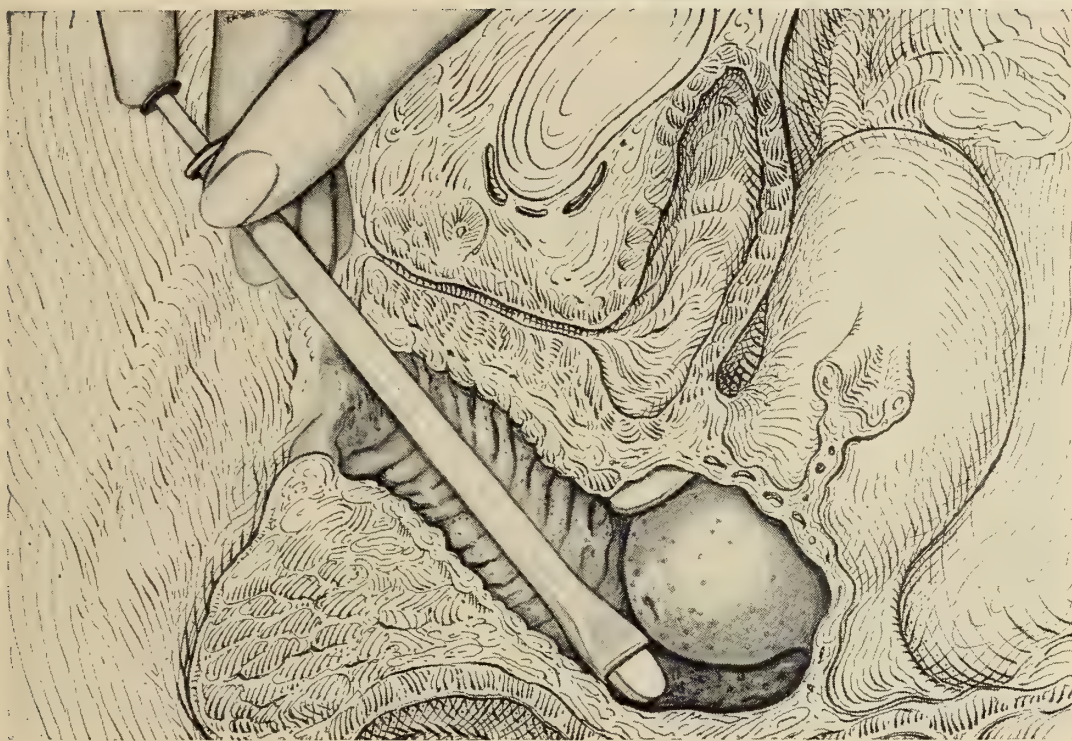
Physical examination revealed a well developed man in no distress. The heart, lungs and

abdomen were normal. There was a large decubitus ulcer over the sacral area and an operational scar at the lower dorsolumbar area in the midline of the back, with no local tenderness. The testicles were completely sensitive to squeezing. The lower limbs showed considerable atrophy and foot drop. The patient could flex the hips 20° but otherwise the legs showed a flaccid paralysis. There was complete anesthesia and analgesia from Poupart's ligament distally on the left and from about the mid thigh on the right. Both legs showed absent reflexes. There was increased sweating of the right foot and leg but no increased warmth.

The temperature, pulse, respirations and blood pressure were normal. The urine had a specific gravity of 1.010 and gave a xx test for albumin; the sediment contained 25 red cells and a few bacteria per high-power field and was loaded with white cells. Examination of the blood revealed a hemoglobin of 15.0 gm. per 100 cc. and a white-cell count of 14,100, with 69 per cent mature and 1 per cent young neutrophils, 1 per cent unclassified cells, 22 per cent lymphocytes, 4 per cent monocytes and 3 per cent eosinophils. The serum total protein was 7.25 gm., the albumin 4.81 gm., the globulin 2.44 gm., and the non-protein nitrogen 47 mg. per 100 cc. A roentgenogram of the chest was normal. X-ray study of the thoracic and lumbar spine showed a severe old compression fracture of the body of the first lumbar vertebra, with marked narrowing of the twelfth thoracic intervertebral-disk space; the body of the first lumbar vertebra was displaced very slightly anteriorly in relation to the twelfth thoracic vertebra. Considerable bony overgrowth had occurred about the fracture between the twelfth thoracic vertebra, and the first lumbar vertebrae. There was irregularity of the transverse processes of the first and second lumbar vertebrae that was probably due to the injury. There also appeared to have been an old laminectomy of the first and second lumbar vertebrae. Calculi were observed in the urinary bladder, but none in the ureters or kidneys.

Shortly after lunch on the second hospital day the patient reached back for the light switch with his left arm, after which he had a sudden

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onset of severe, steady, left subcostal pain not accentuated by respirations. He vomited once without relief and retched repeatedly thereafter. On being questioned at this time he admitted having four loose bowel movements and some mild, generalized crampy abdominal pain on the day of admission but said that the present pain was completely different. On examination the heart and lungs were normal. There was no dyspnea or cyanosis. Marked tenderness was present in the left subcostal region, and to a lesser extent in the midepigastrium. There were no masses or real spasm. There was no flank or costovertebral-angle tenderness, but slight pain on the left on jarring. Peristalsis was almost absent. The remainder of the abdomen was soft and nontender. The temperature, pulse, respirations and blood pressure were normal. Pain subsided a little after administration of atropine and was minimal after 100 mg. of Demerol had been given, being felt only when the patient turned from side to side. Three hours later pain and tenderness were still present, but the physical findings were unchanged.

The pain persisted throughout the night and at 9 o'clock on the following morning the patient was found to be short of breath and slightly cyanotic. He denied any increase or change in character of the pain, which apparently was not made worse by breathing. On examination he was alert, but the skin was cold, moist and pale, suggesting to one observer a state of impending circulatory collapse. The left side of the chest was hyperresonant, with absent breath sounds, and the heart and trachea were deviated to the right side. These findings had not been present the day before. There was left-upper-quadrant tenderness, with spasm and with no sign of peritoneal irritation. The temperature was 98° F., the pulse 130, and the respirations 30.

One and a quarter hours later, after an x-ray examination of the chest with a portable machine the patient died.

DR. PAUL B. JARRETT

Ten months prior to this young man's death, he was crushed by a rock fall which injured his cord and produced a paraplegia. The presence of hematuria, an apparent pyelitis, calculi in the urinary bladder and the urinary laboratory findings are usual in paraplegic cord injury, and I do not believe these findings are of significance in determining the cause of death. The

analgesia and anesthesia levels, as well as the extent of paralysis, indicates the level and severity of the cord lesion and here again I don't think this information contributes worthwhile clues as to the cause of death. The laboratory x-ray work with the exception of the last chest film, which report is not available, doesn't help either. The increased white count could well be explained on the basis of his chronic urinary tract infection.

This patient's death does not appear to be due to an infectious process with toxicity, rather it would appear that he died of cardio-respiratory embarrassment with dyspnea and cyanosis which was not present at the onset of pain but became progressively worse. The attack of pain followed reaching backward with the left arm. This pain was left sub-costal, not related to respiration and accompanied by nausea, vomiting and retching — without relief. There was tenderness in the left sub-costal region, no masses or spasm and nearly absent peristalsis. The *significant* findings were present the next day which were hyper-resonance of the left chest, absent breath sounds with deviation of the heart and mediastinal contents to the opposite side. The left upper quadrant tenderness persisted and shortly after an x-ray examination of the chest, the patient died in respiratory and circulatory failure.

We have then history of crushing injury ten months previously, history of secondary mild trauma (reaching backward) followed by subcostal pain and gastro-intestinal symptoms of vomiting and retching; all of which followed a meal; later on signs of collapse of the left lung with mediastinal shift and cardio-respiratory failure and death. What would fit all of these findings? A spontaneous pneumothorax would fit the hyper-resonance, absent breath sounds, and mediastinal shift; but — it wouldn't explain the sub-costal pain and vomiting and there is no history of symptoms of tuberculosis or emphysema findings, and the development of this pulmonary collapse was much slower than you find in even a tension pneumothorax.

It seems to me that the entity that would fit all of the picture is a rupture of the left diaphragm with evisceration of the stomach and possibly large bowel into the pleural cavity with subsequent gastrectosis and cardio-respiratory pressure and failure.

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omy and Surgery of Hernia;" — "The symptoms of traumatic diaphragmatic hernia may make their appearance immediately after the accident or years may go by before any symptoms are noted." There have been a number of cases where a diagnosis of "partial pneumothorax" has been made following an accident and death has resulted from lack of a swallow of barium in these cases. Great care must be taken before aspirating a chest for supposed pneumothorax.

Zimmerman calls attention to the fact that secondary trauma following a severe injury may be very mild and yet produce rupture of the diaphragm. Carter and Ginseff report a case of a soldier who had a severe wound in the chest which was followed by no signs of symptoms of diaphragmatic hernia, but who developed symptoms while trying to carry a sack of flour a year later.

My diagnosis here is rupture of the left diaphragm with evisceration into the left pleural cavity, strangulation of the stomach, pressure on heart and pericardium with displacement of left lung and mediastinum with respiratory and circulatory embarrassment with death therefrom.

DIFFERENTIAL DIAGNOSIS

Dr. Edward D. Churchill; Before discussing the diagnosis in this case I should like to comment on a few points in the history. I take it that the episode of "cold in the kidneys" was so labeled because the patient passed bloody urine. Later he had some urinary-bladder infection indicated by the great number of white cells in the urinary sediment and probably due to the long period of catheter drainage. The calculi in the urinary bladder I think it is safe to attribute to that infection, rather than to skeletal decalcification from immobilization.

"There was left-upper-quadrant tenderness, without spasm and with no sign of peritoneal irritation." I could add "no sign of pleural irritation" because that too produces spasm in the left upper quadrant.

The old compression fracture of the body of the first lumbar vertebra, the narrowing of the twelfth thoracic intervertebral-disk space and the slight anterior displacement of the body of the first lumbar vertebra all show that the patient had experienced severe external trauma to the spine.

I shall make my diagnosis before looking at the x-ray films. There is only one diagnosis that is consistent with the evidence at hand — evis-

ceration of abdominal organs into the left pleural cavity through a rent in the diaphragm. The diaphragm was ruptured at the time the rocks hit him in the back. I am not going into any long academic dissertation on differential diagnosis. As far as I am concerned, this is the only possibility if the evidence is accepted as stated.

There are two or three interesting points for comment. Why did ten months elapse after the accident before the evisceration occurred, and why did it occur just as he arrived at the Massachusetts General Hospital? I should like to know how he was transported. Did he ride in a train?

Dr. Arthur L. Watkins; In a train and an ambulance.

Dr. Churchill; Quite a distance?

Dr. Watkins; Overnight.

Dr. Churchill; Was he in a roomette, compartment or lower berth?

Dr. Watkins Such patients usually travel in a bedroom or a compartment.

Dr. Churchill; There is quite a difference in the physical forces at play depending on whether one is riding with one's long axis parallel with that of the train or lying transversely. I discovered that when I had my own hernia repaired and traveled in a roomette shortly afterward. I was rolled back and forth all night, and there was considerable strain on the new incision. If this patient was lined up with the long axis of the train, the viscera might have started their migration through the rent in the diaphragm just from the motion of the train. It should be remembered that he had been immobilized by his paraplegia since the accident.

Dr. Watkins; He was in a bedroom with the bed crosswise to the tracks.

Dr. Churchill; Another point of interest is that an evisceration into the pleural space destroys the mechanism of vomiting. It is interesting that the patient managed only once to throw up but he kept on retching and trying to vomit. When the stomach moves into the chest, the antral region becomes obstructed, the stomach fills with swallowed air and fluid and reaches enormous proportions — enough to give the tympany, absent breath sounds and displacement of the heart and mediastinum that were recorded in this patient on the following day. Sometimes, the x-ray film shows little but the stomach blown up like an enormous bal-

loon, with a fluid level. In addition to the stomach, the spleen, omentum, small bowel and large bowel were probably in the chest, but my guess is it was the stomach that was so blown up that it was giving the signs of pneumothorax. One cannot vomit from a stomach that lies upside down in the chest cavity — one retches. To vomit, the diaphragm is set, and the abdominal muscles are contracted. This mechanism does not work when the stomach is in the chest.

In conclusion, I offer only one diagnosis, rupture of the diaphragm, eversion into the pleural space and acute dilatation of the stomach.

Dr. Alfred Kranes; Why did you not consider the possibility of spontaneous hemopneumothorax?

Dr. Churchill; The statements of the record do not suggest it. At the time this pain occurred there was no change whatsoever in the physical findings in the chest. There were no dyspnea, no increase in respirations and no pleural pain from the rupture of an adhesion — nothing on the day of onset to point to a spontaneous pneumothorax. The next day the physical signs were those of a spontaneous pneumothorax.

A Physician; What about a spontaneous rupture of the esophagus?

Dr. Churchill; I thought about that possibility but did not know what to attribute it to. Here was a man who had been well, had not been vomiting and had nothing apparently to suggest an ulcer of the esophagus or ante-mortem digestion of the esophagus. If, in desperation, I had made a second choice, I might have chosen rupture of the esophagus as a blind guess.

CLINICAL DIAGNOSIS

Acute gastric dilatation.

Paraplegia.

Dr. Edward D. Churchill's Diagnosis.

Evisceration of stomach and other abdominal organs through traumatic rent in diaphragm.

Acute dilatation of stomach.

ANATOMICAL DIAGNOSES

Evisceration of stomach and colon through traumatic rent in diaphragm.

Acute dilatation of stomach.

Fracture of eleventh and twelfth thoracic vertebrae with spinal-cord compression.

(Paraplegia.)

Acute and chronic pyelonephritis.

Bladder calculi.

Coarctation of aorta.

PATHOLOGICAL DISCUSSION

Dr. Benjamin Castleman; This photograph of the opened chest shows the collapse of the left lung, which was due, as Dr. Churchill predicted, to a rent in the diaphragm through which had passed the left transverse colon, the splenic flexure, some omentum and this huge reddish ballooned-out stomach lying up against the heart. The stomach was enormous — it held 3 liters of fluid — and was turned up so that the greater curvature was superior just as Dr. Churchill described it; the only parts of the stomach that had not herniated through the rent were the cardiac orifice and the antrum. The rent was located about 3 cm. to the left of the esophageal orifice and extended laterally for 18 cm.; it was 5 cm. wide at its widest point. It was evidently an old rent because the pleural and peritoneal surfaces were fused and well healed, so that the hole must have been present ever since the original accident. There were no adhesions, probably allowing for free herniation or evisceration if one prefers that term. Does herniation mean that omentum has to protrude along with other organs?

Dr. Churchill; With herniation there has to be a sac.

Dr. Castleman; Then the correct term here is evisceration. It was not eventration, a congenital condition in which the rent occurs in a thinned-out diaphragmatic muscle. There was no evidence of peritonitis or pleurisy.

The black coal miner's lung is interesting. We rarely see that condition here. Some time ago Dr. J. Gough, of Cardiff, Wales, presented me with some of his pictures of coal miner's lung, which he sees regularly. This picture, which is that of a thin slice of the actual lung of one of Gough's cases, is similar to that seen in the lung of the patient under discussion; there are islands of carbon with scarring surrounded by foci of emphysema. This is the early stage and one in which there is usually no evidence of right-sided cardiac embarrassment; his lung picture was just about at the stage at which failure of the right side of the heart begins. It is in the more-advanced cases in which the lesions become fused and much larger that tuberculosis may develop.

The kidneys were markedly infected because

of the paraplegia; the infection, I am sure, was the cause of the stones in the bladder, which in turn caused the hematuria.

Dr. Watkins; We should have had Dr. Churchill see the patient the afternoon before he died. Should we have suspected that condition when he had the pain and retching without being able to bring up anything? Is that characteristic enough to make you think of evisceration?

Dr. Churchill; The evidence of severe external trauma and the frequent association of a rupture of the diaphragm with a severe fracture of the spine from direct force is very suggestive.

Dr. Castleman; There is one more interesting finding in this man that we might discuss after we see the x-ray films.

Dr. Stanley M. Wyman; In the original film of the chest and upper abdomen, there is nothing very startling. These films were interpreted as being within normal limits. The films of the thoracic spine and the lumbar spine show the severely damaged first lumbar and twelfth thoracic vertebrae. The bladder stones are well seen in the anteroposterior view. Dr. Laurence L. Robbins made an acute observation on this set of films; he made a diagnosis of coarctation of the aorta based on the narrowing of the aorta at this point. The aortic knob was much smaller than it should have been, and the aorta was constricted at this point. This is seen in the lateral view as a V-shaped indentation in the posterior aspect of the aorta. Another and perhaps more important observation is that in these films taken for the visualization of the thoracic spine, there is a projection, slightly above the level of the left leaf of the diaphragm, of a loop of colon, which I am sorry to say we did not appreciate originally. This can be seen in the lateral view as well, where the loops of colon are much more clearly visualized than they are under normal circumstances because they are adjacent to air-containing lung. The film taken with a portable machine an hour before death shows, as Dr. Churchill predicted, this enormously distended organ the stomach, containing fluid and air. The fluid level is not seen because the film was taken in the supine position. One can see the compression of the lungs, which now occupy this small space, and displacement of the heart and mediastinum to the right.

Dr. Castleman; Dr. Robbins was shown these films while the autopsy was being done, and one of the house officers rushed over and asked if we had found the coarctation. The prosector had already found it. It is interesting that the coarctation was 3 cm. lower than the usual coarctation and was surrounded with a good deal of connective tissue. We toyed with the idea that the injury might have produced a coarctation like that. However, the injury was too high, and microscopical sections gave no evidence of old blood in that region.

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THE *President's* PAGE

AN INVITATION TO ATTEND THE 65th ANNUAL MEETING OF THE ARIZONA MEDICINE ASSOCIATION

THIS MONTH MARKS THE ANNUAL MEETING OF YOUR ASSOCIATION. ALONG WITH THIS MONTHS ISSUE OF ARIZONA MEDICINE IS A BANG UP PROGRAM PREPARED FOR YOU BY THE SCIENTIFIC ASSEMBLY COMMITTEE HEADED BY DR. PODOLSKY. I WISH TO CORDIALLY EXTEND THE WARMEST OF INVITATIONS AND TO URGE YOU ALL TO MAKE THIS A MUST FOR THE LATTER PART OF APRIL.

I ALSO WISH TO EXPRESS MY GREAEST APPRECIATION FOR THE SPLENDID WORK DONE BY ALL OF YOU IN RUNNING THE AFFAIRS OF THE ASSOCIATION. YOUR ASSOCIATION AND I HAVE RECEIVED THE HIGHEST TITER OF COOPERATION AND ENTHUSIASM BY ALL DOCTORS THAT HAVE PARTICIPATED IN JOBS BIG OR SMALL. I USE THIS FINAL PARAGRAPH TO SALUTE THEM WHO REALLY ARE THE PEOPLE THAT MAKE YOUR ASSOCIATION GREAT.

HARRY E. THOMPSON, M.D.
PRESIDENT, ARIZONA
MEDICAL ASSOCIATION

Editorial

ARIZONA MEDICINE

Journal of

ARIZONA MEDICAL ASSOCIATION, INC.

VOL. 13

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NO. 4

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The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
 2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
 3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
 4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
 5. Submit manuscript typewritten and double-spaced.
 6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.
- The Editor is always ready, willing, and happy to help in any way possible.

EDITORIAL

"LIKE YOUR DOCTOR?"

IN the February 13th issue of NEWSWEEK there appeared a survey in the Medical Section under the title "Like Your Doctor?". This same data appeared in the evening papers of Tucson and Phoenix. The manner of presentation of the findings of this survey conducted by Ben Gaffin and Associates, Inc. was surprising and disturbing. It would seem that the case of the doctor is being poorly presented to the public. There is a display of the small percentage of medics, the problem children and black sheep and their antics with no emphasis upon the great majority of doctors who are doing a satisfactory to excellent job at a very reasonable fee.

To quote, "six percent are not dedicated to serving mankind as he should be." To express the same thought in the following way would present a much better picture — that 94% of the doctors are dedicated to serving mankind.

Five percent "he is too quick to recommend operation," rather than the more pleasant findings that 95% do not recommend operation too quickly or needlessly.

Fifteen percent "keep patients waiting longer than necessary" rather than 85% keep their appointments as well as circumstances will permit.

Sixteen percent "he charges too much" rather than 84% of the patients found the charges made were reasonable.

Problems do exist. There are misdeeds and at times a poor philosophy of medicine. We cannot ignore these undesirable features of medical practice. It is preferable however that by strong actions within the medical organization these errors be corrected. It is not desirable to display before the public the shortcomings of a small and limited segment of our profession when these deviations do not reflect the practice and philosophy of the majority of those practicing medicine.

This thought would be helped by the elimination of petty comments to patients about other practitioners. It would be helped by a lessening of the strife perpetuated by the Specialists vs. GP and GP vs. Specialist, a strife that is more apparent than real.

It cannot be "all sweetness and light" but to accentuate the negative and not present the positive is a serious error.

—O—

LETTERS TO THE EDITOR

The opinions expressed here are those of the writers, and do not necessarily reflect those of the editors or of Arizona Medicine.—ED.

F. A. Shannon, M.D.

166 North Frontier Street

Wickenburg, Arizona

October 2, 1955

R. Lee Foster, M.D.,

Editor, Arizona Medicine

Heard Building

112 North Central Avenue

Phoenix, Arizona

Dear Dr. Foster:

IN a recent article¹ Professor Herbert L. Stahnke concluded that meperidine (Demerol(R)) should not be administered to a mammal envenomized by the scorpion *Centruroides sculpturatus* because of a synergistic action between the toxin and the meperidine. Professor Stahnke states that the investigation upon which the article is based was undertaken because several children who had died in recent years "from apparent scorpion envenomization had received Demerol(R) as a therapeutic agent." He observed "that some of these children had not reacted in a manner typical of a child who has received a lethal dose of this venom." He apparently presumes that these children were thus assisted if not pushed into the hereafter by means of meperidine. Such a presumption is a classical example of reasoning *post hoc ergo propter hoc*. In addition Professor Stahnke does not state in what way the children had reacted to make him suspicious that the scorpion was not the cause of death, and, in view of a further statement that a lethal dose of meperidine produced symptoms similar to those of *C. sculpturatus* poisoning, it is unfortunate that he did not elaborate.

Professor Stahnke's experimental methods were grossly biased, as will subsequently be pointed out, and his conclusions that meperidine acts synergistically with scorpion venom to produce increased morbidity or death may thus be rejected.

Three groups of rats were given respectively 0.18 mgm., 0.15 mgm., 0.10 mgm., per 100 grams of body weight of *C. sculpturatus* venom. These same rats were given respectively 20, 15, 5, 2, and 1 mgm. of meperidine. Controls were given 40, 30, 25, 20, 15 and 19 mgm. of meperidine per 100 grams of body weight. It was established that an LD₅₀ of *C. sculpturatus* venom was 0.15 mgm. per 100 gm. body weight of albino rats on the basis of 10 rats. The average time for the five deaths was approximately 80 minutes. An approximate MLD for meperidine was established at 25 mgm. per 100 gm. rat body weight on the basis of an unstated number of rats. The lethal time ranged from 37 to 91 minutes. All of an unstated number of rats given 20 mgm. per 100 gm. body weight, or less, recovered. A tabulation as to how the rats reacted to both meperidine and venom is included. The albino rat

was chosen for the experimentation because the reaction of the animal to "*C. sculpturatus* venom parallels that of the child very closely." It is unfortunate that Prof. Stahnke did not note that the rat does not respond to meperidine as does the human. If a 70 kilogram man (154 lbs.) were given meperidine in the form of 50 mgm./ml. Demerol (R), at the ratio of 20 mgm. per 100 gr. (tolerated by all the rat controls), he would receive a total of 14,000 mgm. or 280 ml. of Demerol (R). Most physicians would concur that a superimposed scorpion sting would be superfluous. Even the minimum meperidine dosage used by Stahnke (0.5 mgm. per 100 gm. rat, which incidentally, was not lethal) would correspond to 350 mgm. in the 70 kg. man, a dosage much higher than would be therapeutically tolerated in anyone but an addict.

Professor Stahnke's data thus breaks down to the fact that rats given lethal or almost lethal injections of scorpion venom will die if given sublethal dosages of meperidine. Prof. Stahnke first observes from his table that the lethal-time in the 0.18 mgm. group of rats is shorter for those rats receiving from 5 to 20 mgm. of meperidine than for those receiving no meperidine. It is hoped that intellectual obfuscation was behind the juggling of data necessary to arrive at this conclusion. Two of the rats, one receiving 1.0 mgm./100 gm. and the other 0.5 mgm./100 gm. of meperidine lived much longer than the two rats receiving no meperidine. If these had been included with the other animals receiving meperidine, the average lethal time for the rats would have been 47.6 minutes compared with 41-minutes for the two receiving no meperidine. This does not mean that overwhelming dosages of meperidine should be used in the treatment of scorpion sting, but it does point out the uselessness of compiling such scant data that the results cannot be safely subjected to statistical P values even with the use of a conversion factor.

Observation number two was that the eight rats receiving the LD₅₀ (0.15 mgm.) injection of scorpion venom all died when subjected to overdosage of meperidine, whereas the observer felt that only four should have died. Perhaps it is facetious to point out that one of these rats receiving 1.0 mgm./100 gm. of meperidine lived 27 minutes while another receiving 20 mgm./100 gr. lived 31 minutes since the combined average for these overdosed rats was indeed only 32

minutes compared to 80 minutes for the rats killed by the venom alone.

Observation number three was that in the 0.10 mgm. group of rats only one recovered, "where-as all should have recovered." Professor Stahnke does not say why he thought all the rats receiving a venom injection two-thirds that of the LD₅₀ should recover, but it may be presumed that all of his controls had. (He lists only one control.) The rats that died received 2.0, 5.0, 10.0, 15.0, and 20.0 mgm./100 gm. body weight.

Conclusion. It is true that "overdosage with meperidine results in evidence of cerebral excitement, including tremors, muscular incoordination and even convulsions."² Nevertheless, condemnation of a useful drug used in reasonable dosage cannot be achieved through experimentation involving statistically insignificant numbers of gravely envenomed rats grossly overdosed with the experimental medication.³

F. A. Simmons, M.D.

1. "Demerol® as an anti-scorpion therapeutic agent," *Arizona Medicine*, vol. 11, No. 2, pp. 51-52.

2. Goodman and Gilman, *The pharmacological basis of therapeutics*, The Macmillan Company, New York, p. 265, 1955.

3. In a recently privately printed (?) publication, Stahnke also condemns the use of morphine for scorpion stings, his conclusions in this case apparently being based upon no experimentation.

January 9, 1956

Frederick A. Shannon, M.D.

Wickenburg, Arizona

Dear Fred:

Through the professional courtesy of *Arizona Medicine* I was provided with a copy of your letter to the Editor regarding my report of our pilot test on the relationship of Demerol® and *Centruroides sculpturatus* evenomization. You seem to be developing a habit of destructive criticism regarding the efforts of others. This is regrettable because it merely clutters an already overburdened literature and reacts unfavorably to you personally. In 1935 I wrote a paper in which I too made a personal reference regarding an error made by a very fine American scientist. My paper was based on an original contribution and although my data have stood the test of time in proving my original statement entirely correct, yet as the years went by I realized that the sum total of my contribution would have been much greater had I omitted the personal reference. Any personal satisfaction that I may have gained was erased by the realization that I lost a potential friend. One simply does not ascend to the heights of respect and success by stepping on the should-

ers of his fellow man. A much greater scientific advance can be made through person to person contacts, friendly, open, sincere discussions rather than by the immature tactics of "hanging dirty linen on the public washline."

It may interest you to know that since making our brief report regarding Demerol® we have had three cases involving Demerol® and scorpion sting brought to our attention. One was a 2 year old male child given 6 cc. of Demerol®, another case, a 25 year old white female received 100 mg. of Demerol®, and a third was a male 42 years of age given 50 mg. of Demerol®. These three cases were also given scorpion antivenom produced by PARL but their reactions were exceedingly atypical when compared with several hundred others whose case histories are in our files. These reports, we felt, indicated a need for a more extensive investigation of this apparent synergistic reaction of Demerol®. Fortunately, we were able to secure the funds to do this. The results have confirmed our previous findings. An article covering this investigation will be published soon and we hope that it will prove of value to the medical profession.

Fred, you are too intelligent an individual not to realize that your own flanks are very badly exposed. As a personal check I suggest that you review the accepted scientific attitudes, the scientific method, and professional ethics seasoned with a little common neighborliness. Now, thoughtfully re-read your letter to the Editor of *Arizona Medicine*. Follow this with a careful reading of my report on Demerol®. After this use your *own letter*, plus the other qualities I mentioned, as a measuring device and review some of your writings. I would suggest your "Letter to the Editor of the *Arizona Republic* on May 13, 1953", or especially your "Report on a Fatality due to Rattlesnake Bite". Certainly by this time you should have a new insight on your "Comments on Treatment of Reptile Poisoning in the Southwest". Be sure to include the three so-called "Methods of Shannon" in *Current Therapy*. We will stop there although your other writings, even the actual contributions to the field of medicine and herpetology, are not above criticism . . . even by your own measuring stick. No, Fred, you are not without fault but I have no desire to be malicious. However, I do stand ready to be helpful at any time. None of us are perfect, but

I feel that where one sincerely tries to make an original contribution to the sum total of knowledge that the mistakes he is bound to make are far outweighed by the truths revealed.

I bear you no ill will, Fred. If you can make original contributions in any field while still following the busy routine of a physician, you are to be congratulated. We extend our fifth invitation to you to make your initial visit to PARL. We would indeed be pleased if you would accept it. In fact, Mrs. Stahnke and I would enjoy having you and Mrs. Shannon for dinner some time. This would provide an excellent opportunity for discussing the work, plans, and aspirations of the Poisonous Animals Research Laboratory and becoming better acquainted since we have so many interests in common.

Very cordially yours,

Herbert L. Stahnke, Ph.D.
Director

HLS:ct

P.S. A copy of this letter has been sent to the Editor of Arizona Medicine. If you still insist on the publication of your letter, I will be content to let this be published as my response.

H.L.S.

P.S.S. I have just received a set of 17 Kodachrome slides covering the history through plastic surgery of two rattlesnake bites occurring in Texas. Would like to have you see them.

H.L.S.

January 10, 1956

(Surrejoinder to Prof. Stahnke's reply.)

Dr. R. Lee Foster
Editor, *Arizona Medicine*
Heard Building
112 North Central Avenue
Phoenix, Arizona
Dear Dr. Foster:

Professor Stahnke does not answer my criticisms. However just his evaluation of my personality may be, he does not challenge my statement that a condemnation of meperidine could not be based upon his data.

An interesting sideline was his mention of a two-year-old child receiving 6 cc. of meperidine for scorpion sting. I would tend to be astonished that no more damage was observed than an "exceedingly atypical" reaction, whatever that may mean. This certainly does nothing to en-

hance Prof. Stahnke's case, as 300 mgm. of meperidine could easily have proved to be quite toxic. It is, of course, considerably less than 2800 mgm. which a 30-pound child would receive if he had been given a dosage comparable to the largest received by Prof. Stahnke's mice.

Very truly yours,

Frederick A. Shannon, M.D.

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The American Goiter Association Hospital

We would appreciate it if you would announce the 1956 meeting of the American Goiter Association will be held in the Drake Hotel, Chicago, Illinois, May 3, 4 and 5, 1956.

The program for the three day meeting will consist of papers and discussions dealing with the physiology and disease of the thyroid gland.



TOPICS OF *Current Medical* INTEREST

RX., DX., AND DRS.

By Guillermo Osler, M. D.

INFECTIONOUS MONONUCLEROSIS can become known as the 'Kissing Disease', with mistletoe as its symbol. Hoagland, in the Amer. Journ. Med. Sciences, believes that kissing is the means of transmission, and that its intimacy (and saliva) are what preserve the organisms. Ordinary contact has never been enough, and the reason has been obscure. . . . His cases (in the U. S. Military Academy) are so well-observed and their lives so regular that he has been able to suggest that the incubation period is 33 days or so, as compared to the previous vague belief that it was 1 or 2 weeks. . . . The age of 17 to 26 years, chiefly in unmarried persons, is both a limitation and a commentary.

News about new drugs is received by the skeptical with reservations, but also with some hope if the source is substantial. . . . It would be likely that Dr. E. Gifford Upjohn, of the firm by that name, must have some basis for saying to a medical meeting, — "Recent developments (in the search for a drug taken **BY MOUTH TO CONTROL DIABETES**) now suggest a breakthrough may have occurred."

Cutler of Sacramento says that **PARENTS AND DOCTORS** have an obligation to supply children with an "EMOTIONAL DIET" which leads to maturity. The proteins, etc., of such a diet are, — 1. the need for security; 2. the need to achieve social adaptability; 3. the need for success; and 4. the need for independence. . . . I wish we had 124 hours a day and 3,000 days per year.

A dental colleague from Phoenix has crashed **"TIME"** Magazine. Dr. Ernest M. Pafford is reported to have successfully started a "**TOOTH BANK**". . . . Teeth are extracted, tagged for blood type and Rh factor, then preserved in deep-freeze. The storage is said to be "indefinite." . . . Transplanting is done by producing a blood clot in the socket, placing the tooth in situ, and waiting for it to 'take'. The pain leaves in 18 hours or so. It never aches thereafter since, tho it has a blood supply, it has no nerves. It can be used for chewing in about 2 weeks.

The '**SKIN BANK**' at Barnes Hospital, St. Louis, was the first in the world. Dr. J. B. Brown, its director and chief of plastic surgery, urges the more extensive use of **POSTMORTEM HOMO-GRAFTS**. He believes that the methods of preservation are so standard that such a bank should be a standard surgical resource. . . . The Barnes

series is only 30 cases, but some were so 'fatally' burned (70% of the body) that all but 6% were saved. . . . Skin remains viable for some time (hours to days) after systemic death. With correct refrigeration it may be saved. . . . Skin homografts act as 'biologic dressings'. They prevent loss of fluids, control anemia and infection better than any other method. . . . Skin is stored in rolls, wrapped in gauze, moistened with a saline-antibiotic mixture, in jars at three to 5 degrees C. It remains viable for 21 days.

For every person whose thyroid needs a **RADIATION-DETECTED FUNCTION TEST** there are hundreds whose **LIVER** need checking. . . . The news that a method has been successfully used by the **UCLA Atomic Energy Project** and the **LA VA Administration Center** is encouraging. They have employed a radio-iodine-tagged rose bengal which is taken up by the liver, and a scintillation counter. The uptake and excretion of the dye can be measured by placing the counter over the liver. Normals take up dye for 20 to 30 minutes and clear it more slowly in the next 2 hours. . . . Liver diseases or poor circulation results in a slow uptake. Slow clearance suggests stones in the ducts. . . . The test supposedly measures several functions, and more directly than most tests.

Some Copenhagen dermatologists have found that **LOCAL INJECTIONS OF KELOIDS** by a 25 mg. per ml. solution of **HYDROCORTISONE acetate** produced partial or complete improvement in 56 cases. The duration had been 6 weeks to 8 years. . . . Injections were at 8 to 20 day intervals, for total doses ranging from 35 to 725 mg.

A very few cases of another more common lesion have responded to topical application of **HYDROCORTISONE ointment** in New Jersey. . . . **HERPES ZOSTER** cleared promptly, with loss of both pain and skin lesions. . . . We'll try it at once, even at \$1.60 per one-sixth ounce, hospital price.

It seems worth while to read again the 'Jones Criteria' for **GUIDANCE IN THE DIAGNOSIS OF RHEUMATIC FEVER**, as modified by the American Heart Association. Their president, Dr. Page the hypertension man, has cooperated with the National Heart Institute of the P.H.S., as well as the A.M.A. and other groups. . . . The Criteria are Major and Minor, plus a few other manifestations. The Major, — carditis, polyarthritis, chorea,

subcutaneous nodules, and erythema marginatum. The Minor, — fever, arthralgia, prolonged P-R interval in the ECG, increased sed. rate, W.B.C., or the presence of C-reactive protein, a history of beta hemolytic strep infection, and previous rheumatic fever or inactive heart disease. . . . Each of these is defined and qualified.

The American Heart Association also lists the CURRENT METHODS OF PREVENTION AND TREATMENT. . . . 1. Diagnosis and drug treatment of streptococcus infections in the general population usually prevent rheumatic fever. . . . 2. All individuals with whom known chorea or rheumatic fever should be started and continued indefinitely on chemoprophylaxis. . . . 3. People with such a history should have larger doses of drugs to prevent bacterial endocarditis after dental extractions, various operations, etc. (600,000 U. aqueous and 600,000 U. procaine penicillin in oil containing aluminum monostearate I.M. just before operation). . . . The doses for use against strep infection are as follows, — IM=Benzathine penicillin G, children 600,000 U., one injection, adults 600,000 to 900,000; or procaine penicillin with aluminum monostearate in oil, children 300,000 U. every 3rd day for three doses, adults 600,000 U., same routine. Oral=children and adults 250,000 U. TID for 10 days. . . . Broad spectrum antibiotics should only be used if person is sensitive to penicillin. Sensitivity should be asked about, watched for. Troupes or lozenges should NOT be used. . . . Prevention of strep infection in rheumatic individuals requires oral sulfadiazine ($\frac{1}{2}$ to 1 gm. each A.M., daily), or penicillin (200,000 to 250,000 U. every day before breakfast), or a hypo of Benzathine penicillin G, 1,200,000 U. once a month. . . . This list is good to know, and has a few surprises.

The MEDICAL SCHOOLS are, relatively, in clover. They have their usual sources of funds (never enough). They have an income from the A.M.A. gift fund (only modestly more). Ten of theirs have \$300,000 to 1 million \$s apiece from the Commonwealth Fund. Then all (repeat, all) have the big fat wonderful grants from the Ford Foundation.

Levine of Boston, father of the 'CHAIR' TREATMENT OF ACUTE MYOCARDIAL INFARCTION, feels strongly that it keeps the patients in good condition, and is well tolerated, and that it is LESS work than keeping the patient in bed. Mortality is lower in the chair patients. . . . The patient is not to be lifted into a chair, but guided out of bed into the chair. . . . This is along the line of proof that a patient can use a commode with less exertion and use of oxygen than a bedpan.

The CARE OF CHILDREN makes good newspaper stories. It's fashionable for women fund

raisers, too. That's all to the good, since kids need care. . . . The most recent regional news has been the 'home from home' for ASTHMATIC CHILDREN in Denver. They take in severe asthmatics from all over the U. S. and rehabilitate them for two years. The care is free and non-sectarian. They provide encouragement and education and clear air, but also what they call "parentectomy". Parents can aggravate or 'fix' an asthmatic status. . . . It's a good deal and it just happens that, from the publicity standpoint, one of the largest news syndicates contributes heavily to the Jewish National Home.

The City of Hope, near Los Angeles at Duarte, is another "NOBODY HAS EVER PAID A CENT HERE" hospital. They specialize in cancer, leukemia, TB, and heart disease. . . . 'CORONET' magazine has just had a spread on this 'Happy Hospital'. Most of the money comes from groups thruout the U. S., but considerably from union and movie money.

"The substitution of oral
Neohydrin
for parenteral meralluride
was successfully
accomplished in 97 per cent
of 70 ambulatory
clinic out-patients with
chronic congestive
heart failure."*

Lawrence, W. E.; Kohn, S. S., and Riser, A. B.;
South. M. J. 47:105, 1954.

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MEDICAL DIRECTOR
DUKE R. GASKINS, M. D.

Dear Doctor:

I am looking forward to the State Medical Convention to be held at the San Marcos Hotel in Chandler April 25 through April 28.

To be on hand during the meeting I have taken Cottage Number 30-A and B. If you have an opportunity, drop around for refreshments and a chat.

If you have any suggestions or questions about HBA and their services, I will be very pleased to talk with you at that time.

Very truly yours,

HOSPITAL BENEFIT ASSURANCE

Duke R. Gaskins, M. D.
Medical Director

DRG:bw

Organization PAGE

CIVICS

Norman A. Ross, M. D.

THE AMERICAN NATIONAL RED CROSS, MARICOPA COUNTY CHAPTER, H. W. Dixon, Chapter Chairman, 329 North 3rd Avenue, Phoenix, Arizona.

"Identification Cards" have just been obtained in quantity.

Samples of these cards are yours for the asking and a supply of same when you wish. The Chairman advises that they are inviting criticism or suggestions from the medical profession as to the contents of future printings of the "Identification Card".

* * *

AMERICAN CANCER SOCIETY, INC., ARIZONA DIVISION, 1429 North 1st Street, Phoenix, Arizona, James R. Bunker, Executive Director.

The Arizona Division of the American Cancer Society has as a result of a survey conducted by the national office made plans to considerably increase its program and activities throughout the state. Note: An Executive Director is appointed and the April campaign goal is \$97,000.

The campaign slogan will be "Fight Cancer With A Check Up And a Check." Doctors should be aware of this added emphasis to the general public, to have a regular "Check Up". The slogan will be widely used on radio, TV, Billboards, newspapers, etc. in April.

State Headquarters will remain at 1429 North 1st Street, Phoenix, Arizona. There will be an Executive Secretary and Field Representative for the Southern counties. This office will be at 201 North Stone Avenue, Tucson, Arizona.

* * *

BOYS' CLUBS OF PHOENIX, Charles M. Hall, Executive Director, 1652 East Moreland, Phoenix, Arizona.

The Boys' Clubs of Phoenix 1955 Annual Report has been Published and is available to those physicians who are interested in establishing Boys' Clubs in their towns or communities.

* * *

COORDINATING COMMITTEE ON SCHOOL HEALTH of the

ARIZONA STATE DEPT. OF HEALTH
STATE DEPT. OF PUBLIC INSTRUCTION
Capitol Building, Phoenix, Arizona

The Handbook on School Health, a Manual of Instruction for Arizona School Personnel is being rewritten by this Coordinating Committee with one section applicable to Health Programs in the grades and another to the high schools. Copies of this manual are available to physicians through the State Department of Public Instruction. Physicians may now order the revised manual for later delivery from either agency.

* * *

COCCIDIOIDOMYCOSIS:

Michael L. Furcolow, M.D., Medical Director and Chief of the Kansas City Field Station of the U. S. Public Health Service, University of Medicine, Kansas City, Kansas, who have been involved in a Histoplasmosis study in the Mississippi and Missouri valleys, attending a meeting of Public Health, Army, chest physicians, and a number of veterinarians at the State Board of Health Laboratory.

Top level conferences in the Fall and then a Public Health study of our problem is possible. Maybe our State Laboratory will do serology tests for coccidioidomycosis.

* * *

TRUDEAU SCHOOL OF TUBERCULOSIS

The Trudeau School of Tuberculosis will present its Forty-first Annual Session, beginning Monday, June 4 and concluding Friday, June 29. The course will cover all aspects of pulmonary tuberculosis and also certain phases of other chronic chest diseases including those of occupational origin.

The schedule for the 1956 course is in preparation and a copy will be sent to you as soon as available.

Inasmuch as registration is limited and reservations have already been requested for the 1956 session, it is suggested that those who plan to attend make early application for enrollment.

The tuition fee is \$100 payable to the Trudeau School on or before the opening date, June 4, 1956. A few scholarships are available for those individuals who can qualify. The Tru-

deau School of Tuberculosis has been approved for training of Veterans under Public Laws and those desiring to obtain Veteran's benefits should clear their registration with the Veterans Administration before the session begins.

Communications should be addressed to:
Secretary, Trudeau School
7 Church Street
Saranac Lake, New York

THE GOVERNOR'S ARIZONA MENTAL HEALTH RESEARCH COMMITTEE, 620 Professional Building, Phoenix, Arizona.

The Western Interstate Commission for High-

er Education Mental Health Training and Research Survey Project Office, Dr. C. H. Hardin Branch, Project Director, advises that its meeting for presentation of the final report and recommendations of the State Committees will be held on the week-end of June 1, 2, and 3, 1956.

It is anticipated that WICHE (Western Interstate Commission for Higher Education) will present a final report at the end of this meeting or soon afterward. The Governor's Committee will furnish WICHE's recommendations on request. Please write us for your copy well in advance of this date so that we may order this report in sufficient amount.

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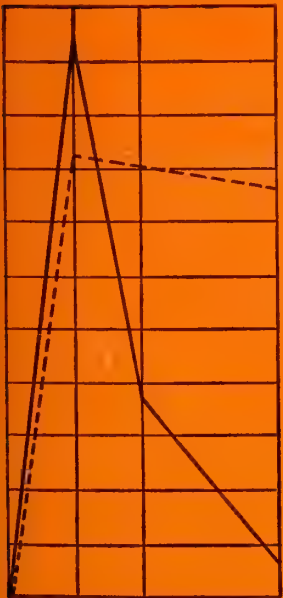
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Woman's AUXILIARY

ALLIED MEDICAL SERVICE RECRUITMENT IN MARICOPA COUNTY

THE recruitment of personnel in allied medical fields is a project which has been assumed by the Maricopa County Medical Auxiliary this year. This program is endorsed by the National Auxiliary and many counties throughout the country are adopting it. Our adoption of this project will directly further one of the aims of the auxiliary, namely: "To extend the aims of the medical profession to all organizations which look to the advancement of health and health education."

Allied services are the fields closely associated with the practice of medicine. Specifically, this year, we shall include: professional nursing, practical nursing, medical technology, x-ray technique, dietetics, physical therapy, occupational therapy, medical records and medical social work.

In the past years the Auxiliary has assisted mainly in the nursing recruitment program. It is, however, becoming increasingly apparent that in order to care efficiently for all of a patient's needs, our husbands require the assistance of well trained personnel in all medical departments. It is also obvious that the harmonious interrelationship of the allied services depends upon a full complement of well trained personnel in each individual field. Therefore, we can see a need existing, on the part of the patient, the doctor, and in the workings of the medical care groups as a whole. We shall try to satisfy this need.

By the first week of October, a letter to all High School Principals, Counselors, and School Nurses were sent by this Committee. The letter states that a panel of speakers has been organized by the Recruitment Committee of the Auxiliary. This panel will consist of one member of each allied medical service group, who has been trained in an AMA approved training program. These speakers will each be prepared to give a ten to fifteen minute talk, which will include: prerequisites for entrance into their specific field; subject matter that the training will cover; nearby locations where the training

may be obtained and their specific duties after their training is completed. We would like to send this panel out as a group, rather than as individuals. Thus we would need approximately two hours for them to complete their program. They could divide the panel in half, thereby giving two, one hour periods, but not less.

One of the panel will be selected as Moderator to introduce the others, keep time, and refer written questions by students to the proper member of the panel. The letter outlining the above plan will be followed by a phone call, asking for the specific date and time that the school wants the panel to appear. This program will be spread over the entire year, according to the desires of the school authorities and not centered around a specified month.

With the assistance of our speakers' bureau, an information booklet is to be made up. This will include a page for each allied field. The information on each page is as follows: list of requirements for entrance into the training course; type of program entailed, e.g., hospital, college or both; subject matter covered during training; nearby training locations. This booklet shall be made available to Counselors and interested individuals.

Allied medical services lose many potential workers each year because high school students have not been made aware that their particular scientific interest exists as a profession. We hope that we may be able to recoup some of these losses by our recruitment program this year.

(Mrs. C. W.) Mary Anne Johnson
Chairman.

ANNOUNCEMENT OF THE VAN METER PRIZE AWARD

THE American Goiter Association again offers the Van Meter Prize Award of \$300.00 and two honorable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. The award will be made at the annual meeting of the Association which will be held at the Drake Hotel, Chicago, Illinois, May 3, 4 and 5, 1956, providing essays of sufficient merit are presented in competition.

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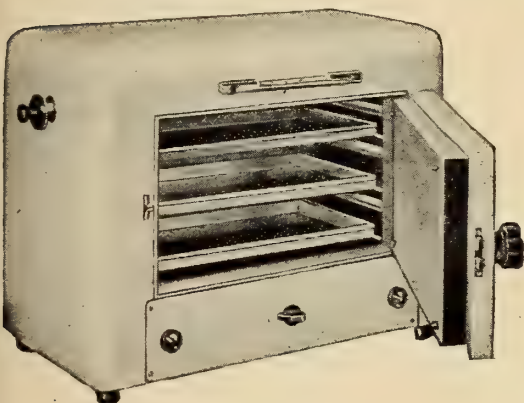
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Syringe Transmission of Infectious
Hepatitis-Cases increases from 94 to 708.

"ARIZONA STATE DEPT. OF HEALTH, 1954"

* * *

Syringes, needles and any other instruments used for the penetration of the skin should be sterilized individually, preferably by heat. . . . Sterilization in an oven or preferably by **autoclaving** must be done between every use of these instruments. . . . From Jour. Amr. Med. Assn. Vol. 145, Jan.-Apr., 1951.

Complete bacteriological sterility can be achieved only by sterilization in the autoclave or hot air oven. From Brit. Med. Research Council, War Memorandum No. 15.

The respective resistances to heat of the viruses of serum hepatitis and of poliomyelitis are not too dissimilar. From Pediatrics Vol. 7, February, 1951.

The safest method of sterilizing syringes and needles used for injections is either dry-sterilizing in the hot air oven for two hours at 160°C. (320°F.) or autoclaving at a temperature of 120°C. (15 to 20 lb. pressure) for 20 minutes. **BOILING IN WATER CANNOT BE RELIED ON TO DESTROY SPORES.** The hot oil method is not recommended. From Brit. Dental Journ. Vol. 92, April, 1952.

The significance of adequate sterilization is obvious. This can be accomplished **only by dry heat sterilization or autoclaving.** From New Eng. Jour. Med., July, 1948.

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Open Letter To The Nation's Doctors From S. Sloan Colt Re Medical Education Week

SINCE its founding in 1949, the National Fund for Medical Education has concentrated almost wholly on obtaining corporation support for the nation's medical schools. Progress has been slow but steady. Each year has seen an increase over the previous one, both in the number and amounts of company contributions. In 1955 more than 1,500 business firms contributed nearly \$1,700,000.

It is, of course, a long way from the \$10 million additional annual income required by the schools. But it has shown us what is necessary to win corporation support: a painstaking — and persistent — campaign of education to show business leaders their stake in medical education.

The encouraging part of the picture is the readiness of business leaders to support medical education "once they know the facts." As Colby M. Chester, chairman of the Fund's Committee of American Industry, once said: "If we can get them to sit still long enough to listen, we can get their support."

That is the problem. And it brings to mind the happy thought that nowhere is a businessman more approachable, or more likely to "sit still," than in a discussion with his doctor.

Now I am not suggesting that physicians badger their patients for contributions to the Fund. But I am wondering if doctors cannot be a great ally of the Fund in bringing, in some way, the needs of the medical schools to the attention of the businessmen among their acquaintances. Certainly no one is better qualified to speak authoritatively than doctors. And no one could be more convincing.

Medical Education Week, it seems to me, provides an excellent occasion for beginning such an approach. It will be a period when the needs of the medical schools, as well as the achievements of medical science, will be discussed at meetings businessmen attend and in publications they read. Perhaps then, too, the approach can be followed up from time to time during the year.

Considering the role that the medical sciences

have played in safe-guarding the people's health, no one has to be timid or reluctant about broaching the subject of continued support for medical education. The testimony of the doctor, coming on the heels of appeals by industry leaders, can do much, in my opinion, to win the businessmen over. Once they are convinced, they are likely to become regular annual contributors to the Fund.

A LIGHTER TAX BURDEN FOR THE YOUNG

ON JULY 18 the House of representatives by a vote of 372 to 31 sent to the Senate H.R. 7225 amending the Social Security Act. The Senate did not act on this bill prior to adjournment on August 2. If enacted, the bill would, among other changes, force a number of self-employed groups now excluded — lawyers, dentists, osteopaths, veterinarians, chiropractors, neuropaths, and optometrists, but not physicians — under Old-Age and Survivors Insurance. Probably 30,000 physicians will attain age 72 during the next 15 years. Age 72 is mentioned instead of age 65, the minimum age at which O.A.S.I. pensions are now payable, because the pensions will be payable at age 72 regardless of earnings; and these pensions will entice few physicians when reaching age 65 to promptly quit taking care of the sick.

Since these 30,000 physicians would pay on the average less than \$1,000 in taxes during the next 15 years and they (and those now over age 72) would become eligible for pension benefits worth about \$14,000, it follows that their exclusion from compulsory coverage will save the taxpayers of the future an average of at least \$13,000 per physician, or about 400 million dollars. So the decision of the Ways and Means Committee and the House of Representatives to continue to exclude physicians from O.A.S.I. is a boon to the taxpayers of the future. If the Republicans and Democrats during the next 15 years continue to vie with each other in further increasing the windfalls for older workers under O.A.S.I., the boon to the next generation from the continued exclusion of physicians may be much greater than 400 million dollars.



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IN MEMORIAM

VIRGIL GUY PRESSON (1896-1955)

Dr. V. G. Presson was born in Doniphan, Missouri, and died last Fall in Tucson.

Following service in our armed forces in England and France in World War I, he began studying Medicine in Glasgow, Scotland, finishing at the University of Oklahoma, class of '23. Before locating in Tucson he studied Tropical Medicine at the International Health Board of Rockefeller Foundation, getting his New York State License in 1923. He then practiced in Santa Ana, California, where he was County Health Officer of Orange County. In 1928 he removed to Tucson, where he practiced as a specialist in Gastroenterology until his death. He joined Pima County Medical Society and Arizona State Medical Association in 1929.

Among a number of important offices held by Dr. Presson are the following:

Past-President, Pima County Medical Society.

Past-Vice President, Arizona Medical Association.

Chief Medical Examiner, Pima Co. Draft Board, World War II.

President and Chief of Staff, St. Mary's

Hospital, 1940.

President and Chief of Staff, Pima County Hospital, 1944.

He was a Fellow of the American College of Physicians, a Scottish Rite Mason, and active as a member of the First Christian Church.

A fellow physician who has been associated with Dr. Presson for more than 20 years recently remarked: "Dr. Presson was good in his profession, yes — but if one quality especially marked the man, it was a deep personal interest he took in each patient, an interest so genuine that it was truly reciprocated by his patients, almost to the point of adoration. It was the rule rather than the exception for them to come not only with their physical complaints but with personal problems, knowing the sympathetic understanding they would receive." This, it seems to us, is as fine a eulogy as could be conceived for any physician.

Survivors are his wife, Lillie, and sister, Mrs. Frank Sancey, both of Tucson.

Hal. W. Rice, M. D.

Book REVIEWS

"PRESENT DAY PSYCHOLOGY", edited by, A. A. Roback, Ph.D. Published by Philosophical Library, New York.

WITH THE ever-growing and spreading of books and papers on psychology, any aspiring writer should hesitate to add to the babel of facts and fancies, formulations and theories on the subject. This volume is justified because its main purpose has been to digest and condense the most pertinent findings and advances in the field — especially those of the past 20 years.

This project, a task too vast for adequate coverage by a single author, has been effectively achieved by the editor's no doubt painfully and laboriously eliciting, from authorities in the myriad respective facets of the field, a total of 40 monographs. It is to the editor's credit that virtually each conforms to a basic outline or purpose — thus attaining a coherence and co-

hesiveness, as well as encyclopedic brevity and comprehensiveness, which is too often lacking in symposia.

Each subject is briefly (20 to 40 pages) and concisely covered by a well-qualified contributor. Usually the theses outline the history and development of the subject, then give in chronological sequence or in the order of their growing importance, the pertinent research findings and theories — and finally sum up and evaluate the conclusions and status of the subject — as conceptualized today.

The majority of contributors are Ph. D.'s, but the medical profession is also well represented by such names as Rudolf Dreikurs, J. L. Moreno, and others. Over 1800 footnotes and references are given by the 40 contributors.

The book is divided into five parts. Under "Topical Departments" are nine monographs — dealing with such matters as: Recent Findings

(Continued on Page 166)

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(Continued from Page 164)

in General Neurology, The Status of Emotion in Contemporary Psychology, The Character Aspect in Recent Psychology and Psychiatry.

Part II is devoted to "Branches." These include: Child Psychology, Educational Psychology, Psychometry, Social Psychology and others.

Part III, "Dynamic and Clinical Psychology," includes papers on Psychoanalysis, Psychosomatics, Psychodrama, Psychodiagnostics, etc.

Part IV, "Methods," contains only two papers — one on Statistics and Probability, the other on Integrational Psychology.

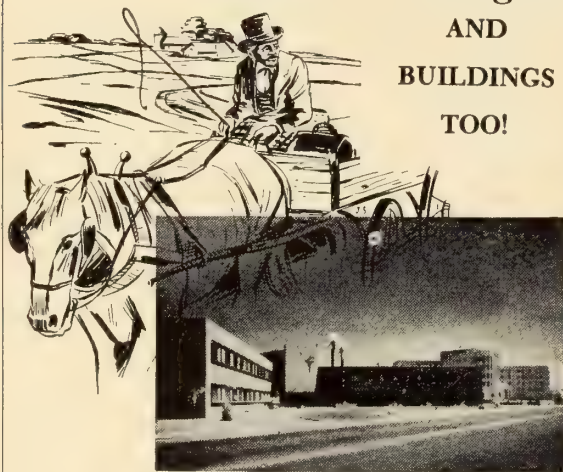
Part V includes six subjects on "Humanistics" — such as Psychology of Art, Psychology of Literature, and Glossodynamics and the Present Status of Psycholinguistics.

This work thus covers not only the main departments and fields of Psychology, but some of its odd and relatively inaccessible corners.

REVIEWED BY:

RICHARD E. H. DUISBERG, M.D.

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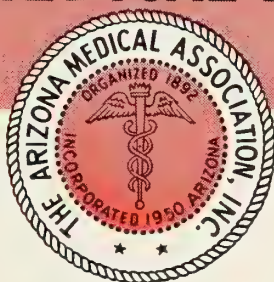
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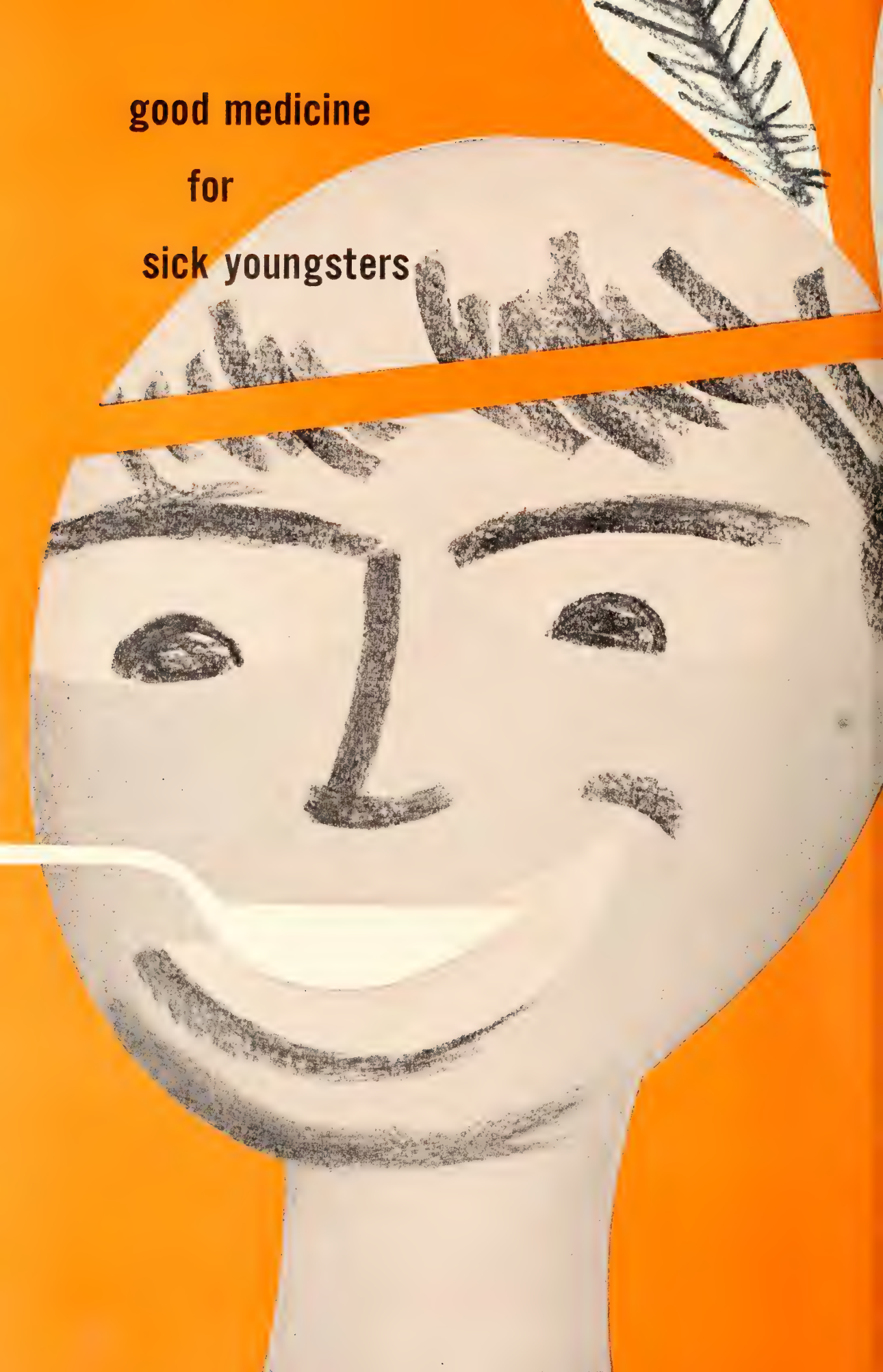
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ARIZONA MEDICINE

Journal of ARIZONA MEDICAL ASSOCIATION

VOL. 13, NO. 5



MAY, 1956

TABLE OF CONTENTS

ORIGINAL ARTICLES

| | |
|--|-----|
| A REGIMEN IN ACUTE ALCOHOLISM | 169 |
| Paul S. Armour, M.D., Phoenix, Arizona | |
| IS HYSTERECTOMY MANDATORY FOR MYOMA OF THE UTERUS? | 173 |
| Joseph B. Raddin, M.D., Phoenix, Arizona | |
| THE TREATMENT OF EPILEPTIC SEIZURES | 176 |
| Norman B. Brown, Iowa City, Iowa | |

MEDICAL PROBLEMS

| | |
|--|-----|
| PHOENIX CLINICAL CLUB | 180 |
| James R. Moore, M.D., Phoenix, Arizona | |

THE PRESIDENT'S PAGE

| | |
|---|-----|
| PRESIDENT'S ADDRESS | 188 |
| Abe I. Podolsky, M.D., President, Arizona Medical Association | |

EDITORIAL

| | |
|-----------------------------|-----|
| A PRINCE HAS FALLEN | 189 |
| LETTERS TO THE EDITOR | 189 |

TOPICS OF CURRENT MEDICAL INTEREST

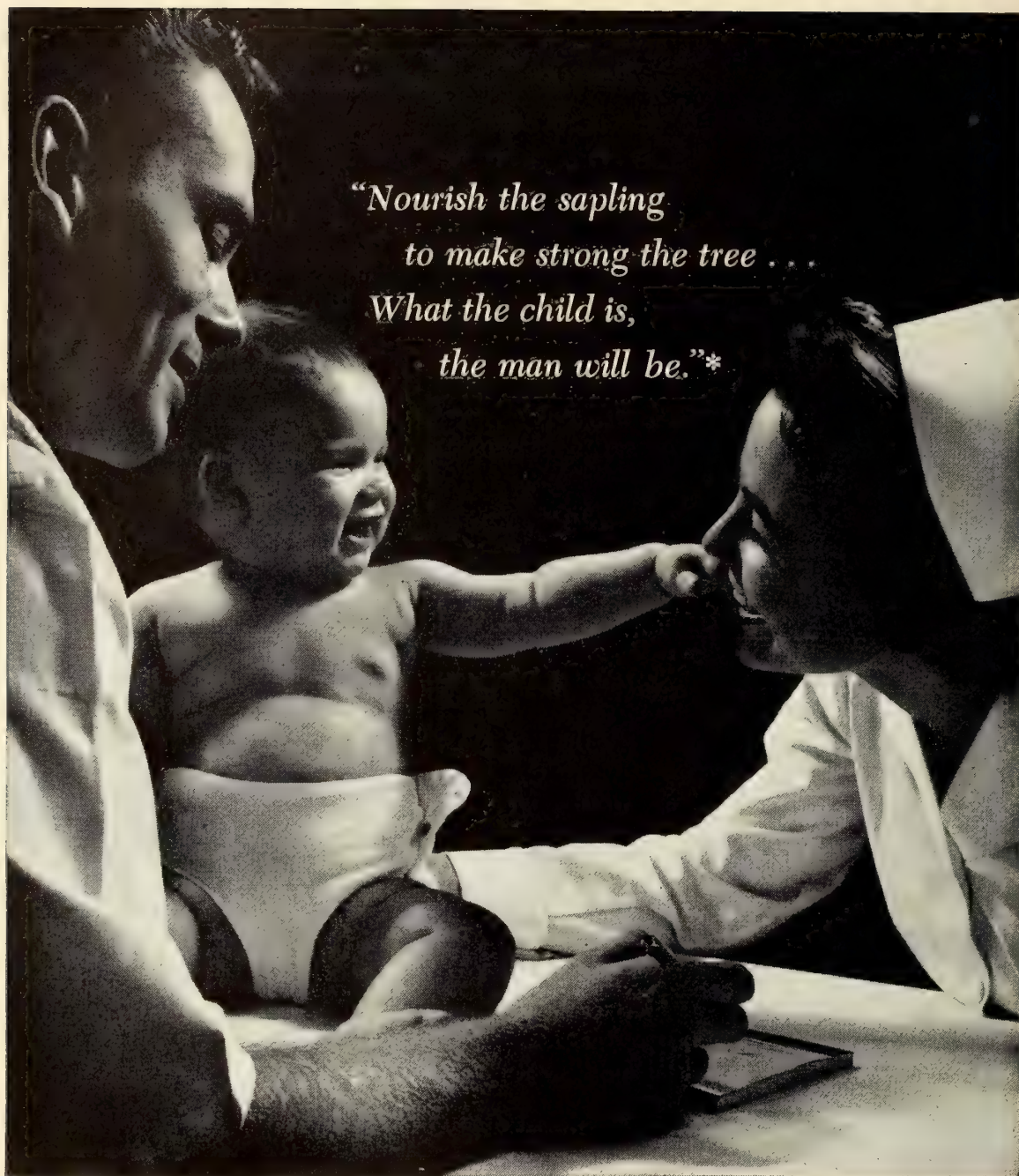
| | |
|--|-----|
| RX., DX., AND DRS. | 190 |
| Guillermo Osler, M.D. | |
| PUBLIC WARNING AGAINST HOXSEY CANCER TREATMENT | 179 |
| RESUME OF THE FOURTH ANNUAL CANCER SEMINAR | 194 |
| W. WARNER WATKINS, M.D., 1883-1956 | 210 |
| HISTORY — Francis Withers Allen, M.D. | 212 |
| ORGANIZATION PAGE — Civics | 214 |
| Norman Ross, M.D. | |

WOMAN'S AUXILIARY

| | |
|---|-----|
| YUMA COUNTY MEDICAL AUXILIARIES PUBLIC RELATIONS REPORT | 213 |
| Mrs. Marian L. Stanley, Yuma, Arizona | |

DIRECTORY

| | |
|----------------------------|-----|
| LABORATORIES | 31A |
| DRUGGISTS DIRECTORY | 33A |
| SANATORIUM DIRECTORY | 36A |
| PHYSICIANS DIRECTORY | 39A |

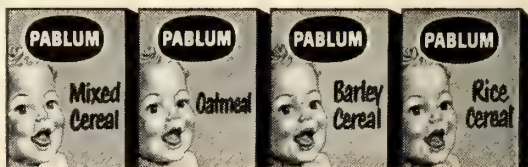


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ARIZONA MEDICINE

Journal of Arizona Medical Association

VOL. 13, NO. 5



MAY, 1956

Original ARTICLES

A REGIMEN IN ACUTE ALCOHOLISM

Paul S. Armour, M.D.*

Phoenix, Arizona

THE traditional methods of treatment of acute alcoholism are not wholly satisfactory as the diverse results reported in the great volume of papers on the subject attest. Largely symptomatic treatment generally has centered around intravenous fluids, vitamins, sedatives and/or hypnotics. One important area where such treatment has been ineffective is control of the extreme agitation, tremor and tension commonly seen in these patients. Sedatives are helpful here, but their continued use in the required dosages presents the hazard of habituation, particularly in the alcoholic. In addition, it is generally recognized that alcohol potentiates some sedatives so that their anesthetic and lethal levels are lowered, thereby increasing the hazard from their use. This synergistic effect between alcohol and certain sedatives will be discussed in more detail later in this paper.

During the past five years mephenesin has proved effective during the postalcoholic period (1, 2, 3). A derivative of propanediol, mephenesin has profound muscle relaxant properties with an associated tranquilizing or sedative effect. In 1953, the carbamic acid ester of mephenesin became available.* Its action has been reported as similar to that of mephenesin, but reputedly of longer duration (4). At the Franklin Hospital approximately 350 acute alcoholic patients are treated each year. Since mephenesin carbamate has become available, it instead of mephenesin has been used because of the reputedly more persistent blood levels produced.

In 1954 several papers on reserpine appeared in the American literature. Though its hypotensive properties were emphasized in the majority of these papers, two investigators reported a tranquilizing effect following reserpine administration (5, 6). Such an ataractic effect appeared promising for control of the excitation and nervousness in alcoholism.

Early in 1955 a trial of parenteral reserpine was initiated at the Franklin Hospital. At that time, an uncharted course for dosage and effects was followed. Since the study began, however, three other investigators have reported their observations in the use of reserpine for alcoholism (7, 8, 9). Two have noted results compatible with those obtained in the present study (7, 8).

In this investigation, in addition to usual supportive measures such as intravenous fluids, vitamins, sub-shock insulin, as indicated, and mineral amounts of sedatives usually limited to bedtime doses, the patients received reserpine, mephenesin carbamate and/or mephenesin, or reserpine concomitantly with mephenesin carbamate and/or mephenesin unless there were contraindications.

Following doses of mephenesin carbamate a definitely hypotensive effect was noted in some patients. When reserpine and mephenesin carbamate were given concomitantly an additive hypotensive effect was observed in some cases. Both drugs were considered contraindicated for patients whose blood pressure on admission was below 120 systolic or 70 diastolic. If the

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blood pressure dropped below these levels under medication, one or both of the drugs was discontinued. The decision as to which drug to discontinue was made on an individual basis, dependent on the patient's apparent response to each drug.

Mephenesin was administered as an elixir. In such form it was never given to a patient after 48 hours of hospitalization.

A Series of 100 cases of acute alcoholics treated are reported here. Forty-nine received reserpine concomitantly with mephenesin carbamate and/or mephenesin. Fourteen received reserpine but no mephenesin carbamate and, conversely, 37 received mephenesin carbamate but no reserpine.

MATERIALS AND METHODS

Drugs and Dosages

Reserpine (Rau-sed) as employed in this study was a solution for parenteral administration, each cubic centimeter containing 2.5 milligrams of the drug, or as tablets for oral administration, generally containing 1.0 milligram of reserpine.

Mephenesin was administered as a mixture aqueous suspension of the carbamic acid ester of mephenesin, 5 cubic centimeters containing 1.0 gram of the ester.

Mephenesin was administered as a mixture of equal parts by volume of Tolserol Elixir and dimenhydrinate.* The dimenhydrinate was added to minimize gastrointestinal side effects. Each cubic centimeter of Tolserol Elixir contains 0.1 gram of mephenesin (alcohol 24 per cent by volume).

Generally doses of reserpine, depending on size and weight of the patient, ranged from 5 to 60 milligrams daily by intramuscular administration, and were continued in the majority of cases at 15 milligrams every 6 hours throughout the hospital stay. When indicated, individualized dose of oral reserpine were given to patients transferred to the outpatient department.

Doses of mephenesin carbamate were 1.5 ounces daily by mouth after meals and at bedtime, for as long as postalcoholic nervousness persisted or as long as the hypotensive qualities of the drug permitted. It was found that the medication should be administered after or well spaced between meals, for when given within 45 minutes before meals, it nullified appetite, even in malnourished patients.

"Franklin Rx", or a mixture of Tolserol Elixir and dimenhydrinate, was used in one-half to one-ounce doses every 4 to 6 hours to sate the newly admitted patient's desire for a "drink". It was discontinued as early as possible and not used if the patient did not demand alcohol.

Patients

One hundred adult alcoholic patients were observed for a period ranging from one to 30 days. The average period was 4.5 days. Nineteen of these subjects were female, 81 were male. They ranged in age from 27 to 72 years. On admission to the hospital, the sugar content of the blood in 54 patients ranged from 62 to 400 milligrams of sugar per 100 cubic centimeters of blood; and the blood alcohol content in 49 patients from .055 to .593 cubic centimeters of alcohol per 100 cubic centimeters of blood. The average blood sugar level was 99 milligrams per 100 cubic centimeters and the average blood alcohol .169 cubic centimeters per 100 cubic centimeters. Laboratory work was not done for 44 patients.

The blood sugar determinations were non-starvation levels and should be downgraded 18 to 20 milligrams per 100 cubic centimeters to approximate starvation levels. The blood alcohol levels were made shortly after admission of the patients to the hospital. Since a majority had been drinking until the moment of admission, it is likely these alcohol levels would have been higher had it been possible to take samples 40 to 60 minutes later.

On admission five male patients presented symptoms of delirium, another had a history of past delirium, one male and one female had hallucinations. One male was in a comatose condition with deep reflexes absent, and six other males were stuporous. In addition, thirteen males and two females were incoherent.

Secondary diagnoses observed were as follows: In the females: peptic ulcer—1, barbiturate tolerance—2, psychoneurosis—2, morphine addiction—1, and the menopausal syndrome—2. In the males: diabetes—1, asthma—3, neurasthenia—1, hypertension—4, bronchial pneumonia—1, chronic diarrhea—1, psychoneurotic—1, tolerance to sedatives—5, as well as urinary infection—1. One male gave a history of thorocoplasty for tuberculosis. Where indicated, the patients received treatment for such conditions in addition to treatment for alcoholism.

*Supplied as Tolseram by E. R. Squibb & Sons.

RESULTS

In evaluating the results observed in the 100 patients studied, a "good response" is reported in cases in which the regimen indicated marked benefit in quieting or relaxing the patient. Where a favorable response was observed but accompanied by persistent side efforts requiring additional medication, such as sedation by barbiturate, the response was considered "fair". Where the medication seemed to increase the symptoms, the response is reported as "worse". "Indeterminate" has been applied to those cases in which time for observation was too short to evaluate results or secondary symptoms obscured whatever effect, if any, occurred following administration of the drugs under study. The observations in the total group are presented in Table I.

| TABLE I. | | | | | | |
|---|-----------------|---------------|------|-----------|-------|---------------|
| Patients who received reserpine, mephenesin carbamate and/or mephenesin | | | | | | |
| | No. of Patients | Good Response | Fair | No Effect | Worse | Indeterminate |
| Female | 11 | 5 | 1 | 1 | | 3 |
| Male | 38 | 24 | 7 | | 3 | 4 |
| TOTAL | 49 | 29 | 8 | 1 | 4 | 7 |
| Patients who received reserpine | | | | | | |
| | No. of Patients | Good Response | Fair | No Effect | Worse | Indeterminate |
| Female | 3 | 2 | 1 | | | |
| Male | 11 | 4 | 2 | 1 | 1 | 3 |
| TOTAL | 14 | 6 | 3 | 1 | 1 | 3 |
| Patients who received mephenesin carbamate and/or mephenesin | | | | | | |
| | No. of Patients | Good Response | Fair | No Effect | Worse | Indeterminate |
| Female | 5 | 3 | | | | 2 |
| Male | 32 | 19 | 6 | | 2 | 5 |
| TOTAL | 37 | 22 | 6 | | 2 | 7 |

Twenty-nine of the patients who received concomitant doses of reserpine and mephenesin carbamate showed good to excellent response to the drugs. Eight patients improved under the drugs, but it was necessary to give additional medication to obtain desired therapeutic effect. In one patient no demonstrable effect was observed. Four seemed to experience increased symptoms. In seven patients the results were indeterminate.

Six of the 14 patients who received reserpine alone showed marked improvement. In three, the response was considered fair. One experienced no observable effect and one appeared worse. In three the results could not be evaluated.

Of the 37 patients who received mephenesin carbamate alone, 22 showed marked improvement; six fair, and two were worse. The results in seven cases were indeterminate.

SIDE EFFECTS

Side effects ascribable directly to the specific use of drugs were minimal. Following the

seventh injection of 2.5 milligram doses of reserpine, one patient stated the medication aggravated his bronchial asthma, although when asleep he was quieter while reserpine was given. General malaise with vomiting and "palpitations" developed in a female cardiac patient who received 10 milligrams of reserpine intramuscularly and two one-ounce doses of "Franklin Rx" (mephenesin and Dramamine) by mouth. This patient had a history of the use of barbiturates during 10 years. Another patient who received 15 to 30 milligrams of reserpine for several days in addition to occasional one-ounce doses of "Franklin Rx" complained that reserpine made him "lifeless", even in smaller doses.

Nausea, dizziness or epigastric distress followed doses of 2.3 to 53.3 grams of mephenesin carbamate in four different cases. One of these patients also received 30 milligrams of reserpine, another 60 milligrams daily for four days, with marked hypotensive effect in both cases. The blood pressure of the first patient was 242/170 on admission. Four hours after receiving 15 milligrams of reserpine, his blood pressure dropped to 130/80. The other patient's blood pressure fell from 238/110 to 170/70 during his hospital stay of four days.

DISCUSSION

The concomitant use of reserpine and mephenesin carbamate in the dosages described constitutes the most effective medication that has been available at the Franklin Hospital for the treatment of the acute alcoholic patient. A significant percentage of the patients included in this study (about 15 per cent) had been previously treated in this hospital so that it was possible to compare present results with those previously observed. Patients formerly aggressive, desperately nervous and extremely difficult to handle, under the quieting effects of reserpine and the relaxant effects of mephenesin carbamate were in some instances remarkably cooperative, less of a problem to themselves and much less to the hospital staff in their care.

In addition to their effectiveness no evidence has been found that either reserpine or mephenesin carbamate potentiates the effects of the alcohol. From past experience it has become increasingly evident that a high incidence of alcoholic patients present symptoms of tolerance or addition to the barbiturates. They arrive at the hospital with high blood levels of alcohol

plus an unknown amount of barbiturate. The attending physician does not know how much barbiturate has been taken. Questioning the patient, if possible, yields little reliable information on this score. To give additional sedation in the form of barbiturate might present serious complications because of the known synergism between alcohol and barbiturates. Reserpine, even when given to patients known to have taken heavy doses of barbiturate did not depress the pulse or respiratory rate. Moreover, it did not excite the patient as is commonly observed with excessive barbiturate sedation. Many patients with very high blood levels of alcohol as well as indeterminate amounts of barbiturate when admitted experienced a physiological type of sleep for as long as 12 to 20 hours after the administration of a parenteral dose of 5 to 10 milliigrams of reserpine.

During the "drying out" period the muscle relaxants were specifically helpful in controlling the tremor and skeletal muscle spasm. They allayed the craving for more alcohol. In addition, they exerted a moderate sedative action.

SUMMARY

One hundred alcoholic patients were treated with reserpine, mephenesin carbamate or mephenesin alone or concurrently. Forty-nine of these patients received both reserpine and mephenesin carbamate, 14 received reserpine alone and 37 received mephenesin carbamate. Mephenesin was given in elixir form, when required, at the time many of the patients were admitted.

Twenty-nine of the 49 patients (59 per cent)

receiving concomitant doses of reserpine and mephenesin carbamate showed good to excellent response to the drugs as evidenced by the tranquilizing or relaxant effects. Six of the 14 (43 per cent) who received reserpine alone showed good therapeutic results, and 22 of the 37 (59 per cent) who received mephenesin carbamate alone experienced good to excellent control of tremor and tension during alcohol withdrawal. Mephenesin elixir proved highly effective when given as a tranquilizing portion at the time some of the more disturbed patients were admitted. In addition to their effectiveness, these drugs may be given to alcoholic patients without danger of potentiating the toxic effects of sedatives commonly present in such patients when admitted to hospital.

The favorable clinical responses obtained in 57 of the 100 patients (57 per cent) who received reserpine and/or mephenesin carbamate warrant their further clinical trial in the treatment of alcoholic patients.

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IS HYSTERECTOMY MANDATORY FOR MYOMA OF THE UTERUS?

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THE most common tumor of the uterus is the myoma. It is a tumor derived from muscle tissue. A leiomyoma is a tumor derived from smooth (or involuntary) muscle. Since the uterus is composed entirely of smooth muscle, a myoma of the uterus is technically a leiomyoma.

The word "fibroid" has long had general medical usage and acceptance to denote a myoma of the uterus. Myomas are, however, of muscle origin and are not derived from connective tissue elements. Actually, the word "fibroid" is defined as composed of fibrous tissue.

Microscopically, the characteristic picture of myoma of the uterus is that of spindle-cells arranged in interlacing or whorl-like pattern. Between the muscle bundles there is found a variable amount of connective tissue. In some uterine tumors the connective tissue may be more abundant than the muscle tissue. On the basis of the predominating tissue, tumors are often spoken of as a myofibroma or fibromyoma. Even when the connective tissue predominates, it must be regarded as a diluent of the more characteristic muscle elements. There is no definite capsule about a myoma but they are usually sharply marked off from the surrounding uterine musculature by a pseudocapsule of light areolar tissue. Novak(13).

Myomas of the uterus may be single but more frequently they are multiple. They may be huge or microscopic in size. They are of dense structure and form nodules which can be peeled out from the surrounding muscular wall of the uterus. Literally, therefore, none of the terms "fibroid", "uterine fibroid", "fibroid uterus", "fibromyoma", or "myofibroma" imply a tumor of the uterus is discrete rather than being disseminated throughout the uterus—they are all myomas and discrete. One or more may be pedunculated from the peritoneal surface of the uterus. Any one or several may be subserous (beneath the serosa, the peritoneum or serous membrane lining the interior of the abdominal cavity and surrounding the contained viscera, but not completely surrounding the uterus); interstitial or intramural (situated in the mus-

cular wall of the uterus); or submucous (beneath the mucous membrane, or endometrium lining the uterus). Rarely a submucous myoma will prolapse into the cervical canal.

Therapy will be proposed which may make MEDICAL treatment of small myomas of the uterus successful in slowing or stopping growth and so preclude, at least in young women, the present necessity for hysterectomy. Myomec-tomy with retention of uterine function is to be encouraged. Hysterectomy in young women for small uterine myomas is, perhaps, no longer justified without trial of competent hormone therapy.

PROPHYLAXIS.

Is it possible to prevent uterine myoma? Possibly, YES(5). If every adolescent girl could be given indicated endocrine therapy when needed to insure normal balanced anterior pituitary hormone regulation of thyroid, ovary and adrenal cortex function, the probability of uterine myoma developing later in life might be reduced. Many years of research will be necessary to prove the value of such therapy, if any. Perhaps the hormone is not yet available. Few women who have undergone hysterectomy will dispute that this is a valuable study to undertake.

ETIOLOGY.

Experiments in animals concerning the cause of uterine myoma have suggested various endocrine disturbances(3)(7). To summarize many reports, chronic estrogen hyper-secretion seems to be considered the main cause of uterine myomas.

Speculation about the cause of myoma of the uterus in women then led to clinical investigation of hormone imbalances as being the chief factor. In the medical literature as reviewed by Miller(8) and others, distinction was often made between "fibroids" (4, 6, 9, 10, 11, 12) and "fibromyoma" (1, 5, 6, 9). Summary of the literature on causes of human uterine myomas seems to incriminate:

1. Hypothyroidism,
2. High levels of serum estrogen, and
3. Deficient progesterin secretion.

Imbalance of ovarian and thyroid function is

*Presented before staff of Memorial Hospital March 19, 1956.

conceded by many writers to be the cause of uterine myomas (1, 2, 4, 5, 6, 10, 11, 12). The anterior pituitary and adrenal cortex hormones should now be included in any study as well as the thyroid and ovarian hormones since abnormal function of one frequently disturbs function of the others. Recent developments in blood hormone assays will open additional types of study not previously available.

Since uterine myomas increase in size only during the years a woman menstruates, it is believed they are in some manner related to ovarian function and hormones but the exact cause of these tumors is not known (14, 15). Pertinent discussion will be found in (15, 16, 17, 18).

PRESENT THERAPY FOR MYOMA OF THE UTERUS CAUSING SYMPTOMS.

It might be worthwhile to emphasize that the presence of a myoma is NOT an indication for hysterectomy unless it is submucous, or of such a large size, either single or collectively, as to distort the uterus and to rise out of the pelvis, or show sudden growth(19).

Since myomas of the uterus are discrete tumors which CAN be dissected from the uterus, myomectomy should be the operation elected in young women, (9, 17, 18). When there are numerous large and small myomatous nodules in women younger than forty-five years, subtotal hysterectomy may be the wiser procedure. Total hysterectomy is frequently followed by dyspareunia due to painful scar in the vault of the vagina or a shortening of the vagina, either or both of which can be avoided by the subtotal operation(13).

In the definitely menopausal woman, X-therapy is regularly effective in shrinking myoma of the uterus and is often wisely selected in preference to pelvic surgery.

Removal of a uterus for bleeding without a diagnostic curettage is inexcusable(19). In the older age group, a common mistake appears to be the misinterpretation of menopausal symptoms. These irregularities, normal at that period, are designated as menometrorrhagia and hence abnormal. Here again, conservative measures, and enlightenment of the patient will probably obviate an unnecessary hysterectomy many times(19).

THERAPY SUGGESTED FOR SMALL MYOMATA NOT CAUSING SYMPTOMS.

Endocrine therapy often appears to be able to slow the growth of, and even to shrink, small

myomas in young women. Since a myoma grows slowly, myomectomy can be delayed a year or two without any harm to the patient to note results of hormone medication. Hysterectomy in a young woman should certainly be postponed until a thorough evaluation of endocrine therapy has been made and rate of, or lack of, growth determined.

Goodall(11) reported follicle cysts of the ovaries and uterine myomas were often associated and suggested possibilities for improvement in therapy. An imbalance of female sex endocrine gland system function is highly probable and therapy should be directed at correcting this endocrine gland dysfunction(16, 17).

Pregnant mare serum hormone therapy regularly stimulates anterior pituitary gland secretion of its trophic hormones to normal amounts. This hormone together with thyroid gr.i and stilboestrol in 0.1 mg. daily dosage(20) is adequate to correct female sex endocrine gland dysfunction. I have never yet in over twenty years of practice, observed a uterine tumor, benign or malignant, develop in a woman who had been adequately treated for female sex endocrine gland dysfunction when a girl or young woman. I have reason to be hopeful about the value of hormone therapy not only in preventing, but also in treating small uterine myoma.

Intravenous estrogen therapy will control practically every uterine hemorrhage temporarily. Hemorrhage due to retained placenta will also be temporarily checked and excessive blood loss prevented until facilities are ready for surgical D. & C. Hysterectomy for non-cancerous uterine hemorrhage should now be rare(9, 19). Subsequent indicated hormone therapy has always regulated any tendency to abnormal uterine bleeding. I believe the so-called submucous myoma rarely is the cause of irregular or excessive uterine hemorrhage. Hormone imbalance must be the most common etiology because the hemorrhage can so promptly be stopped and future menstrual periods regulated in amount of flow and time of onset by indicated and adequate hormone medication. I do not understand why hysterectomy and/or oophorectomy, particularly in young women, is condoned for menorrhagia and metrorrhagia when competent hormone therapy is so curative.

No therapy is indicated for small uterine myomas not causing symptoms in the definitely

menopausal woman, that is, a woman who is over fifty years of age and who has not menstruated for a year or more. The stimulus to continued growth of a myoma has been withdrawn with the decline in blood estrogens in the climacteric. Uterine myomas naturally shrink after the climacteric. Estrogen therapy for menopausal complaints is probably contraindicated in the presence of even a small tumor of the uterus, not because of any tendency to cause carcinoma, but because estrogens are believed to predispose to myomatous changes in the uterus and may stimulate the growth of any myoma present. Progesterone alone or small doses of an estrogen with adequate amounts of progesterone or testosterone and perhaps also thyroid seem preferable and harmless therapy for menopausal complaints.

The occasion has never yet been encountered that a small myoma of the uterus in a menopausal woman later became larger, troublesome or cancerous. If it is ever encountered, I would suspect estrogen therapy of causing the increase in size of a myoma but not of causing carcinoma.

I have prescribed X-therapy for all sizes of myoma in menopausal women and in those approaching the menopause with excellent results in shrinking the size of the uterus and thus relieving pressure symptoms. Surgery to remove a myomatous uterus in a climacteric woman seems to be an unwarranted risk entirely unjustified.

Excessive and irregular uterine bleeding DUE TO A MALIGNANCY will require radical surgery and irradiation at any age(9). Vaginal and cervical cell preparations for Papinicolau stain are adequate for accurate diagnosis in most cases which obviates the need for many curettages.

Many hysterectomies are admittedly performed unnecessarily because of FEAR of subsequent malignancy or present malignancy which was not confirmed by tissue study postoperatively. Cervical carcinomas can be seen and a biopsy taken of a suspicious appearing lesion before doing such a radical operation as a hysterectomy. Carcinomas of the cervix should have been treated when they were postpartum cervical erosions and endocervicitis, long before carcinomatous changes occurred. A surgical diagnostic curettage is preferred by many physicians when fundus carcinoma is suspected and it is, perhaps, more accurate but is not without its

hazards. Since carcinoma of the cervix is so much more frequent than isolated carcinoma of the fundus of the uterus, the vast majority of uterine carcinomas should be seen by vaginal speculum examination. IRREGULAR uterine bleeding at any age IS reason to suspect carcinoma. However, too many hysterectomies are being performed on young women for menorrhagias due to hormone imbalances rather than due to a malignancy suspected without adequate or competent tissue study preoperatively. There is little excuse for this needless surgery with modern diagnostic techniques. Thorough preoperative diagnostic studies can reduce this error to a minimum and should be insisted upon by hospital tissue committees.

SUMMARY.

A review of experimental production of uterine myoma in animals and of human ovarian pathology associated with uterine myoma, implicates a female sex endocrine gland system imbalance or dysfunction as the basic cause.

Therapy which can be used as a study project to treat and possibly prevent uterine myomas in young women should always be evaluated before hysterectomy is performed. Myomectomy and indicated endocrine therapy will conserve many a functioning uterus.

In my opinion, it is now poor advice to urge hysterectomy for a small uterine myoma in a young woman. Nor is hysterectomy indicated for menstrual irregularities and hemorrhagic bleeding (not irregular uterine bleeding) since they are due to hormone imbalance and respond to promptly to competent hormone therapy.

Unless the myoma is large enough to cause considerable distress, the natural tendency near the climacteric to regress in size should obviate any necessity for operation.

For the definitely menopausal woman and those nearing fifty years of age, X-therapy is regularly effective and avoids the many hazards of surgery and subsequent hormone imbalances in the elderly woman.

Gray and Slager report in one hospital a reduction in the number of hysterectomies performed from 168 in 1951 to 12 in 1955!! It would appear that hospital tissue committees, courageous and conscientious in their studies, can markedly reduce the incidence of hysterectomies(19).

If other physicians can be interested in studying long time effectiveness of hormone prophylaxis

lactic therapy in young women for uterine myoma, a great public health service will be rendered. Much present radical pelvic surgery will become obsolete. The tremendous amount of ill health and psychoneurosis subsequent to hysterectomy and oophorectomy due to hormone imbalance will be prevented.

CONCLUSION.

NO, it is NOT always mandatory to perform a hysterectomy for myomas of the uterus at any age!

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THE TREATMENT OF EPILEPTIC SEIZURES

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MORE than one and one-half million people in the United States suffer from convulsive disorders of some kind, the aggregate usually being referred to as "the epilepsies". These conditions are four times as common as poliomyelitis and as common as active tuberculosis or diabetes mellitus. Hereditary factors are seldom the cause of seizures in most instances(1). Some tangible pathologic process in the brain usually gives rise to the condition. This modern concept of the epilepsies of great practical importance in providing better treatment, educational and employment opportunities, and social acceptance for this large segment of our population.

After recognizing the type of seizure, the next step is to determine the cause, if possible. If the onset of seizures occurs within the first 25 years of life, the most common causes are blood incompatibility, neonatal asphyxia, birth trauma, encephalitis, and head injuries. In the middle and older age groups brain tumors and degenerative diseases are the most frequent causes.

The patient's past history and description of a clinical seizure will usually provide the most

valuable criteria for a diagnosis of the type of seizure and the probable cause. Neurological examination may aid in localization of the epileptogenic lesion or it may be normal.

Certain laboratory procedures may clarify the type and location of the lesion creating the seizures. Included are: (1) skull X-rays, (2) electroencephalography, (3) spinal fluid analysis, (4) pneumoencephalography, and (5) cerebral angiography.

As in every other branch of medicine, the selection of the therapeutic method which has the greatest chance to be of benefit to the epileptic patient follows easily once an accurate diagnosis of the type of seizure has been made.

DRUG THERAPY

The bromides, discovered in 1857 by Sir Charles Locock, have been the time honored agents in the treatment of seizures. Phenobarbital was first used in treating seizures in 1912 by Hauptmann and Hall. Dilatin was developed in 1935 by Merritt and Putnam. In the past fifteen years, Mesantoin, Mebarol, Hibicon, Phenurone, Mysoline, Tridione, Paradione, have also been found useful.

*Markham Fellow in Epilepsy, under preceptorship of Dr. John R. Green and Dr. Harry F. Steelman, 550 W. Thomas Road, Phoenix, Arizona during the summer of 1955.

Principles of drug therapy of epileptic seizures:(2)

1. There are wide individual differences in the response to drugs and each patient must be managed on an orderly trial-and-error basis.
2. The choice of drugs to be used will depend to some extent on the type of epilepsy with which one is dealing.
3. Drug dosage will depend upon the frequency and severity of the attacks. The aim of treatment is to achieve complete control of attacks with the lowest possible dosage and with as few undesirable side effects as possible.
4. The simpler and safer drugs should be tried first. An average dose of the chosen drug is used as a start. If the attacks are not well controlled, the dose is increased at short intervals until a maximum daily dose is reached. More often a second drug is added so that the combined effect of the two drugs is tested.
5. Drug therapy should be continuous. Any change in drug dosage, either increase or decrease, should be made gradually. Sudden withdrawal of a drug, particularly phenobarbital, may precipitate status epilepticus.
6. If a tolerance is built up to a certain drug where the dosage must be increased every few weeks or months to maintain the same degree of control . . . a change in medication will be needed.
7. A record of all attacks should be kept by the patient or by relatives for submission to the physician so that an objective assessment of therapy may be made.

The majority of seizures, except for Petit mal and its variants, are most likely to respond to Phenobarbital, Dilatin, Mesantoin, Mysoline or similar drugs. These may each be used alone or in combination. If the seizures are infrequent (less than six per year) one may start with Phenobarbital alone.(3) If the attacks are more frequent, the usual medication prescribed is Dilatin grains $1\frac{1}{2}$ three times a day, and Phenobarbital grains $1\frac{1}{2}$ at bedtime. Mysoline and Mesantoin are also useful in these types of seizures. They are prescribed in dosages of 250 mgm. and $1\frac{1}{2}$ grains, respectively, three times a day. These drugs are also more effective

when combined with Phenobarbital or Mebaral. In particularly refractive cases these drugs can be combined with Dilantin or each other.

Petit Mal seizures, either in the form of brief "absences" or myoclonic jerking are most likely to respond to Tridione or Paradione. Combinations of these two drugs seem to have little, if any, more effect than if used singly; but combining them with Phenobarbital is often helpful. The usual dosages of these drugs are grains $2\frac{1}{2}$ three to six times a day in children, and grains 5.0 three to six times a day in adults. The most serious side effects of these two drugs are agranulocytosis and aplastic anemia. Accordingly, monthly white cells counts should be made. Drowsiness, rashes, and nausea have also been reported as untoward effects of these drugs.

Psychomotor epilepsy is apt to be more resistant to therapy than the Grand Mal or Petit Mal types. Maximum dosages of the above drugs are often needed to obtain a reduction in seizures.

Bromides are still employed occasionally in cases where the more modern drugs have failed, but because of toxicity and difficulty in controlling blood levels, they should be avoided whenever possible. See figure 1.

Even though seizures are controlled the dosage should be continued until the patient has been seizure free for a period of several years. At this time, the medication may be reduced gradually if the electroencephalogram shows no evidence of dysrhythmia.

Ketogenic diets advocated by some, are found effective in reducing the frequency of seizures at times, but are so difficult to maintain that they fall into the realm of impracticality. Maintaining the patient in a state of slight dehydration reduces the seizure tendency in many cases. This can be easily accomplished by supervised fluid intake or by the use of safe diuretics such as Diamox. Discontinuation of alcohol and adequate rest are to be recommended.

Status epilepticus is the state of frequently recurring, generalized convulsive seizures between which the patient is apt not to recover consciousness.(2) Such attacks, if not terminated quickly may result in paralysis, psychosis, and occasionally death. Phenobarbital grains 1-2 should be given subcutaneously and may be re-

peated as often as necessary. Dilatin grains 1½-3 should be given rectally with a hole punched in the end of the capsules. Either anesthesia is often used in status and can be administered with a fair degree of safety. Chloroform should not be used. Dehydration should be avoided by giving intravenous fluids as needed.

Seizures of infancy can be controlled in most cases with the standard anticonvulsants. Phenobarbital grains ¼ should be used if the child is under 6 months of age. It should be given every 4 hours as long as necessary. This medication should be bolstered with Dilantin Infatabs, two to be given rectually at once and followed by one every 8 hours as long as necessary.

SOCIAL ASPECTS OF MEDICAL THERAPY

The stigma which has been attached to the word epilepsy for many years is another problem which the patient must face and indicates another form of therapy which the physician must render. The treatment involves two fields:

- (1) Personal contact with the patient, his family and friends and
- (2) Correction of public misunderstanding.(4)

The patient must be informed as to the nature of seizures and their cause. It should be emphasized that seizures do not necessarily affect mental development. The patient should be

encouraged to live as normal life as possible and the disease should be treated with the matter-of-factness used in treating most other diseases. Children should attend public schools if at all possible, and parents should be warned not to be overprotective of their epileptic children. Excepting perhaps those occupations with great amounts of responsibility or one with many hazards attached to it, the patient should be encouraged to find a job which will make him a socially and economically productive member of the community.(4)

SURGICAL TREATMENT

Surgical therapy is occasionally indicated.(5) Three important prerequisites must be fulfilled before surgical intervention is considered: (1) The epileptogenic area must be well circumscribed with constant localized abnormality recorded in the electroencephalgram. (2) All attempts at controlling the seizures with medications must have failed. (3) There must be the likelihood of completely rehabilitating the patient if the seizures are controlled.(5) The excision of the epileptogenic focus can be expected to eliminate seizures in approximately 50% of the selected cases.

Thus it is seen, that with the advent of newer and more effective drugs, improved surgical techniques, and more understanding of the

FIGURE 1
USEFUL ANTICONVULSANT DRUGS

| Drug | Dosage | Indications For Use | Toxic Effects |
|-------------------|---|---|---|
| (1) Phenobarbital | Daily disage: ¼ — 6 gr. | Major seizures (incl. focal types) Alone or with (4) or (5) | Rash, drowsiness |
| (2) Mebaral | ½, 1½, & 3 gr. Daily dosage: 1½ — 9 gr. | Major seizures (incl. focal types) Used in place of (1) or combined with (3) or (4) | Drowiness but less than with (1) |
| (3) Dilantin | ½ & 1½ gr. (cap.) Daily dosage: 1½ — 6 gr. | Major seizures (incl. focal types) Alone or with (1) or (2) or (4) | Rash, gingival hyperplasia, diplopia, ataxia |
| (4) Mesantoin | 1½ gr. Daily dosage: 3 — 9 gr. | Major seizures (incl. focal types) Alone or with (1) or (2) or (3) | Rash, drowsiness, neutropenia agranulocytosis |
| (5) Tridione | 2½ gr. (tab.) 5 gr. (cap.) | Minor seizures (petit mal types) | Rash, gastric symptoms, visual disturbances, |
| (6) Paradione | 5 gr. (cap.) Sol. 5 gr. per ml. Daily dosage: 5 — 30 gr. | Either drug may be used alone or com- bined with (1), (2), or (3); or (1) & (3) | nephrosis, but less common with (6). Neutropenia & agranulocytosis |

epilepsy problem in general, the outlook for the epileptic patient is far from hopeless. Indeed, their outlook is becoming brighter every year, and it is the duty of every physician to be cognizant of these factors.

SUMMARY

1. Epileptic seizures are usually the result of a gross or microscopic lesion in the brain and are rarely due to hereditary factors. Each patient should be studied thoroughly in order to accurately determine the type of seizure manifesting itself and the probable cause.
2. Clinical classification of seizures depends upon the history, physical and laboratory examinations.

3. Rational drug therapy will control the seizures in 75% of the patients. Social problems and indications for surgical intervention in treatment of epileptic seizures are discussed.

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PUBLIC WARNING AGAINST HOXSEY CANCER TREATMENT

Sufferers from cancer, their families, physicians, and all concerned with the care of cancer patients are hereby advised and warned that the so-called Hoxsey treatment for internal cancer has been found by the United States Court of Appeals for the Fifth Circuit, on the basis of evidence presented by the Food and Drug Administration, to be worthless treatment.(1)

The Federal Food, Drug, and Cosmetic Act authorizes dissemination of information regarding drugs in situations involving imminent danger to health or gross deception of the consumer.(2)

The Hoxsey treatment for internal cancer involves such drugs. Its sales represents a gross deception to the consumer. It is imminently dangerous to rely upon it in neglect of competent and rational treatment.

The Hoxsey treatment costs the patient \$400 plus \$60 in additional fees; expenditures which yield nothing of any value in the care of cancer. It begins with a superficial and inadequate examination of the patient at the Hoxsey Cancer Clinic, Dallas, Texas or Portage, Pennsylvania. The patient at Dallas is then supplied with one of the following "cancer" medicines: Black pills, red pills, a brownish-black liquid, or a light

red liquid. contain: Potassium iodide, licorice, red clover blossoms, burdock root, Stillingia root, berberis root, poke root, cascara sagrada, prickly ash bark, and buckthorn powder. The red pills contain potassium iodide, red clover, Stillingia root, poke root, buckthorn, and pepsin. At Portage the patient is given the same "cancer" medication although the colors of the pills are different. The light red liquid medicine is potassium iodide in elixir of lactated pepsin. There is evidence that potassium iodide accelerates the growth of some cancers.

The Food and Drug Administration has conducted a thorough and long-continuing investigation of Hoxsey's treatment. His claimed cures have been extensively studied and the Food and Drug Administration has not found a single verified cure of internal cancer affected by the Hoxsey treatment. In addition, the National Cancer Institute of the United States Public Health Service has reviewed case histories submitted by Hoxsey and advised him that the cases provided no scientific evidence that the Hoxsey treatment has any value in the treatment of internal cancer.

On October 26, 1953, Harry M. Hoxsey, the Clinic, and all persons in active concert with him were enjoined by the United States District Court at Dallas, Texas, from shipping their worthless cancer medicines in interstate commerce with labeling representing, suggesting or implying that the products are effective in the treatment of any type of internal cancer. While

(Continued on Page 186)

(1) The court decisions can be found in Volume 198, Federal Reporter, Second Series, page 273, and Volume 207, Federal Reporter, Second Series, page 567.

(2) 21 U.S.C. 375 (b) This authority has been delegated to the Commissioner of Food and Drugs by the Secretary of Health, Education, and Welfare, 20 Federal Register 1998.

PHOENIX *Clinical* CLUB

The Case History in this discussion is selected from the Case Records of the Massachusetts General Hospital, and reprinted from the New England Journal of Medicine. The discussant under Differential Diagnosis is a member of the staff of the Massachusetts General Hospital. The other discussants are members of the Phoenix Clinical Club.

MASSACHUSETTS GENERAL HOSPITAL PRESENTATION OF CASE CASE 39021

A TWENTY-EIGHT-YEAR-OLD woman entered the hospital because of a cough. Two weeks before admission the patient, who had been active and apparently well, developed a "headcold", and began to have a painless, hacking, mildly irritating cough, productive of small amounts of whitish, nonbloody sputum. Two days later she began to feel ill and vomited three or four times. She became tired, listless and quite drowsy, and experienced drenching night sweats, with a temperature rise to 100 to 101°F. each evening. Her physician found nothing abnormal on physical examination and prescribed cough medicine and later aureomycin, 1 tablet every four hours for 18 doses. Despite this medication the patient stayed in bed, since she continued to feel feverish, tired, sweaty and anorectic. There had been a slight increase in the hacking cough, which was now productive of half a cupful of white phlegm each day. Three days before entry the temperature fell to normal, and the patient felt somewhat better. A roentgenogram of the chest taken at this time was reported as showing a mediastinal mass. Cough, sputum and malaise persisted and the patient entered the hospital.

The patient had never had any previous illnesses similar to the present one. There was no history of previous cough, fever, sputum, hemoptysis or chest pain. As far as she knew she had no recent exposure to tuberculosis. There was a questionable weight loss of 10 pounds; otherwise, the systemic review was essentially negative.

Physical examination revealed a young woman in no distress, except for occasional paroxysms

of hacking, nonproductive cough. There were a few small lymph nodes palpable in the right supraclavicular fossa. The lungs and heart were normal; there was no increase in mediastinal wideness. There was no clubbing of the fingers, and the remainder of the examination was negative.

The temperature was 98.6°F., the pulse 90, and the respirations 25. The blood pressure was 110 systolic, 70 diastolic.

The urine was normal. Examination of the blood showed a hemoglobin of 10.5 gm. and a white-cell count of 10,600, with 77 per cent neutrophils, 14 per cent lymphocytes, 2 per cent monocytes, 5 per cent eosinophils and 2 per cent young neutrophils. A smear of the blood revealed a variation in the size of the red cells. The prothrombin time was 16 seconds (normal 13 seconds). A stool was guaiac negative, and a cytologic examination of the sputum was reported as "doubtful" for malignant cells. Fluoroscopic examination of the chest disclosed an irregular, slightly nodular, soft-tissue mass in the anterosuperior mediastinum that displaced the aortic arch downward and the trachea slightly posteriorly. The mass did not move on swallowing and showed no change in size on Valsalva or Muller maneuver. The vocal cords moved freely. There was a few strands of increased density on the anterior surface of the right upper lobe. A small amount of fluid was present in both costophrenic sinuses; diaphragmatic motion was free and equal. There was no significant lymph-node enlargement in the paratracheal, intrapulmonary or posterior mediastinal groups.

In the hospital there was little apparent change in the patient's condition. On the sixth hospital day an operation was performed.

DISCUSSION

JAMES R. MOORE, M.D.

The onset of illness in this previously healthy 28-year-old woman was that of a respiratory infection with cough, malaise, fever, night sweats, etc. with disappearance of fever after ten days but with persistence of the other symptoms. At this time x-rays revealed a mass in the anterior mediastinum that displaced the aortic arch downward and the trachea slightly

posteriorly but which had not reached a size to give significant evidences of pressure such as venous engorgement, vocal cord paralysis, atelectasis of lung or bone erosion. The presence of fluid in each costophrenic angle indicated some pleural irritation. The absence of hemoptysis is against a destructive or erosive process about or into a bronchus. In all probability a knowledge of the exact pathological nature of this mass would enable us to give the proper diagnosis of this young woman's illness. As noted above, however, the evidences of her illness are not on the basis of mechanical disturbance within the chest but rather are those of a constitutional reaction characterized by malaise, fever, night sweats, loss of weight, irritative productive cough but without hemoptysis. This group of findings could be due to an ordinary acute respiratory infection which, however, would probably have cleared up rapidly under aureomycin. It also could be due to pulmonary tuberculosis although there was no history of exposure, no hemoptysis, no positive sputum, at least none was mentioned, and no x-ray evidence of apical infiltration. With the finding of the mediastinal mass we must attempt to correlate this with the general symptom complex and find if such a combination is consistent with any given disease or clinical entity.

Mediastinal abscess is a possibility but the absence of pain, a very moderate elevation of white blood count, and the absence of any etiological factor, such as trauma, makes this diagnosis unlikely. A benign tumor such as fibroma, lipoma, dermoid cyst, thoracic goiter, etc. seems unlikely as they produce symptoms because of mechanical interference secondary to the size or location of the growth rather than by constitutional reaction. A malignant growth could give the findings described and serious consideration must be given to such a process arising from the thymus or its remnants. The enlarged supraclavicular lymph nodes on the right are also suggestive of possible malignancy although these might occur in infection or other conditions to be mentioned later. The onset, the blood picture and the course of the febrile episode, however, seem rather against this diagnosis. With the reporting of "doubtful" malignant cells in the cytologic study of the sputum, a bronchogenic carcinoma must be considered. This will be rejected, however, on the basis of doubtful find-

ings, absence of hemoptysis, atelectasis or bronchoscopic report as well as the age of the patient.

There is a localized form of Hodgkin's disease and when this is intrathoracic and accompanied by febrile paroxysms with very little external adenopathy, the diagnosis is obscure and only suggested when x-ray examination reveals a mediastinal mass. In Hodgkin's disease a review of the clinical signs and symptoms in a recent study revealed malaise in 15%, cough in 10%, night sweats, loss of weight and dyspnea in 7%, and fever in 10%, the latter being much more common in deep involvement than in the superficial or external type. This case was not of long enough duration to demonstrate the Pel-Erbsstein type of fever in which there is a steady rise to 102 to 103 degrees where it remains for several days, then in a few days falls to normal or subnormal by lysis. After remaining normal for a couple of weeks or so the cycle is repeated sometimes over a period of months. In this case the blood picture is consistent with that seen in Hodgkin's disease, namely a mild anemia, a moderate elevation in the white blood count, with relatively high neutrophils and low lymphocytes with a mild eosinophilia of 4 to 5%.

From the above and on the basis of reasonable correlation between the onset, course and nature of the constitutional manifestations of this illness with the presence of a soft tissue mediastinal mass, my diagnosis is:

1. Hodgkin's disease or possibly a malignant type of lymphoma.

DIFFERENTIAL DIAGNOSIS

Dr. Helen S. Pittman: "The mass . . . showed no change in size on the Valsalva or Muller maneuver." Does everyone except me know what the Muller's maneuver is? I did not know and had to look it up. It is just the opposite of the Valsalva maneuver: the patient expires fully, closes the glottis and attempts to inspire; whereas in the Valsalva maneuver, the patient inspires, closes the glottis and attempts to expire. Is that right, Dr. Wyman?

Dr. Stanley M. Wyman: Yes, in the Valsalva maneuver the intrathoracic pressure is increased, whereas in the Muller procedure it is decreased.

Dr. Pittman: In the Valsalva maneuver intrathoracic pressure is increased, and the heart becomes smaller; in the Muller maneuver the

opposite takes place. It becomes important if one is considering a mediastinal cystic mass; one can, I am told, fairly well put his money on its changing size during these maneuvers.

This history boils down, I think, to a process in the mediastinum that had to do with infection — either induced or aggravated by infection. Concomitant findings were a few supraclavicular lymph nodes, a small amount of fluid in both pleural cavities, a slight change in white-cell count and slight elevation of the prothrombintime. This was a healthy woman. I think there are enough women of twenty-eight who have a hemoglobin of 10.5 gm. and some variation in size of red cells so that I am not going to attribute much to that. I am not going to pay any attention to the tuberculosis because I do not think that has anything to do with the picture.

There was a note in the protocol only of fluoroscopy; are there any films?

Dr. Wyman: This large, somewhat irregularly outlined mass lies in the upper mediastinum far anteriorly. The trachea is displaced posteriorly and is somewhat compressed, as you can see in the oblique film. The changes in the upper lobe are those of atelectasis, with perhaps some pneumonitis in the anterior segment of the right upper lobe. As far as one can tell, the hilar shadows are not unusual, but they are so obscured by the mass that I do not think I can be certain. There is no evidence of bone destruction. The bronchi show no intrinsic changes, although they are somewhat narrowed. There is some fluid in the pleural spaces.

Dr. Pittman: The reason that led me to medicine rather than surgery was that as a student I thought that surgery consisted of the differential diagnosis of lumps, which I thought was a very dull field. I shall include in this discussion as little dullness as possible, although it boils down to a differential diagnosis of a lump. One never knows what a lump is until he has his hands on it or a piece of it under the microscope or both. This lump was in the anterior superior mediastinum. I am going to talk about what seems to me to occur in the superior mediastinum. The first is mediastinitis or mediastinal abscess. We have nothing to make a logical case of mediastinal abscess. This woman had a respiratory infection, to be sure, but in most cases of mediastinitis there has been

either surgery on the neck or trauma, so there is no reasonable background for making a diagnosis of mediastinitis or mediastinal abscess. Therefore, since I think infection is what precipitated this episode, I am going to talk about infection in structures within the superior mediastinum. There may have been an intrathoracic thyroid gland. It usually moves with swallowing; is that right, Dr. Wyman?

Dr. Wyman: Yes; sometimes when an intrathoracic thyroid gland is very large, it is trapped behind bony structures, but usually it moves on swallowing.

Dr. Pittman: I cannot find any cases in which a thyroglossal-duct cyst presented so low, and I am going to throw that possibility out. That leaves me with the great vessels and trachea. First of all, I do not think there is any reason to assume that the mass was vascular. Cysts may arise from the trachea and from the esophagus. They are not common, and they would probably change in position on these maneuvers with changes in intrathoracic pressure. A previously existing cyst communicating with either the trachea or the esophagus would satisfy a good many criteria. Something happened to this patient after she got an ordinary cold. She began raising a good deal of sputum, I gather, not too long before she began to feel better; suggesting that when she began to produce half a cupful of white phlegm each day she was decompressing something and that the decompression had a casual relation to the temperature's falling to normal and her beginning to feel better.

It seems to me a more logical diagnosis for this lesion is that it was a mass of thymic origin. Then I can assume that it was a simple cyst or a more solid structure of teratoid nature — using that term to cover both dermoid cyst and teratoma. There are radiologists who believe that teratomas of the thymus may be suspected when a lobulated mass is present. That may be going out on a limb, but it is a very convenient limb so I am going to pick on it at the moment.

What caused the fluid in the pleural cavity? I am inclined to think, now that I have seen the films, that there was probably enough pressure to produce a simple mechanical fluid. There is a detailed article, which I have read only in abstract, on the anatomy of the mediastinum and its drainage, describing the role of

the phagocytic cells that block dissemination of irritants from the pleural cavities to the mediastinum and move particles introduced into the mediastinum away from the midline toward the pleura. I shall assume that the fluid was secondary mainly mechanical from pressure.

I shall settle for a diagnosis of a tumor of the thymus. These tumors are usually silent for a long time and make themselves known in late adult or early middle life. I think there was secondary infection from the upper respiratory tract. How it got there is a little tenuous. Somewhere, there was a bronchial communication to account for the sputum. I believe the patient had a teratoid, essentially silent, tumor of the thymus, either dermoid or teratoma, and secondary infection.

Dr. Alfred Kranes: A year and a half before admission the patient had x-ray films of the shoulder, which showed the mass to be present then.

Dr. Pittman: That delights me.

Dr. Chester M. Jones: If there is compression of the trachea, would not more or less infection be bound to occur behind it?

Dr. Pittman: It seems to me that there is always enough going on there so that it would.

Dr. Bernard M. Jacobson: On a statistical basis, Dr. Pittman, would not lymphoma rather than thymoma or colloid goiter be more likely?

Dr. Pittman: I believe statistically that they are the most common tumors in that region. I forgot to discuss the tumors of lymphoid tissue when I was standing on my feet. I had thought about them, since they are the most common tumor in that location. I was riding a limb that appealed to me and I did not look at my notes. I suppose that statistically, a thymic tumor would come last. I am somewhat prejudiced by the fact that I had a case of teratoma of the thymus within the year.

Dr. Benjamin Castleman: Although Schlumberger believes that all mediastinal teratomas and dermoid cysts arise from the thymus gland most pathologists think that they arise not from the thymus gland but from an embryologic remnant of one of the branchial clefts in the anterior mediastinum. We think of a thymic tumor as arising from the two types of cells within the thymus and designate it as a thymoma. The dermoid cysts and teratomas are tumors of the anterior mediastinum. What you meant was an anterior mediastinal tumor, not

necessarily a tumor arising from the thymus gland?

Dr. Pittman: As I understand it, the thymus gland and the structures that give rise to teratomas are derived from the branchial clefts, usually the third or perhaps the fourth, which all come wandering down together. The thymus wanders down routinely and usually atrophies; the teratomas come in only occasionally, but they all derive from a common ancestor in that they all come from the same embryologic part of the body.

Dr. Castleman: Yes, that is true, but I think it is clearer to most people to separate the dermoid cyst and teratoma in the anterior mediastinum from the thymoma, which gives a different prognosis and which is a different tumor.

Dr. Pittman: I shall accept that; I was not talking about a thymoma.

Dr. Kranes: Fortunately, we are not pinned down as Dr. Pittman was, and our diagnoses varied. My own opinion was that this was either a teratoma or a thymoma, but it was quite apparent that the only way the diagnosis could be made was by examination of tissue. A difference of opinion arose regarding where to begin. Dr. W. Allan Tisdale, who admitted the patient, suggested that we biopsy one of the two small supraclavicular lymph nodes that he had found. They seemed to be so unimpressive that I believed the only way we could be sure of a correct diagnosis was to biopsy the large mass. That was done by Dr. Richard H. Sweet, who found a large infiltrating mass, which he was unable to remove, so he took a small piece for biopsy. It was his impression at the time of operation that it was a malignant thymoma.

CLINICAL DIAGNOSIS

?Teratoma, ?malignant thymoma of mediastinum.

DR. HELEN S. PITTMAN'S DIAGNOSIS

Teratoma of the mediastinum.

ANATOMICAL DIAGNOSIS

Malignant lymphoma, Hodgkin's type, of anterior mediastinum.

PATHOLOGICAL DISCUSSION

Dr. Castleman: Since Dr. Sweet is not here, I shall read an excerpt from his operative note:

The growth was rather adherent on the right side to the undersurface of the sternum and costal cartilages. There was a large, nodular,



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¹January, H. L. et al: Clinical experience with tetracycline. *Antibiotics Annual* 1954-55, p. 625.



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irregular, firm tumor bulging into both pleural cavities. There was considerable fixation to the underlying tissues, including the innominate vein, the vena cava and the great arteries going to the head and neck.

The tumor was therefore, large and infiltrating; the biopsy showed characteristic Hodgkin's disease.

There have been a few papers within recent years describing tumors of the anterior mediastinum believed to be thymomas that have large multinucleated cells said to be indistinguishable from the Reed-Sternberg cells of Hodgkin's disease. I strongly believe they are not thymomas but the ordinary type of Hodgkin's disease, because many of those patients have gone on to develop lesions in other parts of the body just as patients with Hodgkin's disease do. Metastasis of a thymoma outside the chest rarely, if ever, occurs. In the case under discussion I do not believe that even adherents to the idea of a peculiar type of thymoma with the Reed-Sternberg type of cell would call this a thymoma because, in addition to the multinucleated cells, there were fibrosis, eosinophils and the immature lymphocytes seen in Hodgkin's disease.

After the operation the patient received x-ray treatment to the mediastinum.

Dr. Pittman: This again brings up the point that I made at the beginning about these lumps, the nature of which remains unknown until they are examined under the microscope.

Dr. Jacobson: I do not think that is always true. If one can find a peripheral lymph node and take it out, one can make the diagnosis.

Dr. Castleman: Our experience has shown that these small cervical lymph nodes that are barely palpable prove to be inadequate for diagnosis so that one eventually has to biopsy the main mass. That is undoubtedly why Dr. Kranes chose not to have a biopsy of the lymph node.

In some hospitals this patient would have received at least a therapeutic x-ray dose without any biopsy. In this hospital, the radiologists refuse, and rightly so, to give x-ray treatment to a mediastinal mass until they know what it is. We have a patient with a mediastinal mass that was treated by x-ray and was later found to be tuberculous, with death due to miliary spread.

Do you have any films showing the mass after treatment?

Dr. Wyman: The patient had a large tumor dosage of nearly 3000 r since we expected to stop the disease and there was only one proved site. These two films, taken after x-ray therapy almost two and a half months after the original examination, show a definite decrease in size of the mass.

Dr. Jacobson: It is a pity that this tumor was not operated on a year and a half previously. About five years ago I saw a young woman of about the same age, with a similar history, a similar-sized mass and also with a diagnosis of Hodgkin's disease microscopically. Dr. Sweet was able to remove the entire tumor. Thereafter she had x-ray therapy. She is still living and well without any recurrences after five years.

Dr. Jacob Lerman: Do you think you should consider surgery now after x-ray therapy?

Dr. Castleman: I doubt if it could be removed now. The pulmonary symptoms are no longer present. This patient re-entered the hospital about three months later and had a hysterectomy for a large fibroid.

(Continued from Page 179)

the Government intends to prosecute violations of the injunction, this warning is necessary for the immediate protection of cancer victims who may be planning to take the Hoxsey treatment.

Those afflicted with cancer are warned not to be misled by the false promise that the Hoxsey cancer treatment will cure or alleviate their condition. Cancer can be cured only through surgery or radiation. Death from cancer is inevitable when cancer patients fail to obtain proper medical treatment because of the lure of a painless cure "without the use of surgery, x-ray or radium" as claimed by Hoxsey.

Commissioner of Food and Drugs
Geo. P. Larrick

U. S. Department of Health, Education, and Welfare, Food and Drug Administration, Washington 25, D. C.

MEETING NOTICE

10th Annual Rocky Mountain Cancer Conference, July 11 and 12, Denver. Sponsored by the Colorado State Medical Society and Colorado Division of the American Cancer Society. No Registration Fee.

Notes on the Diagnosis and Management of "Dizziness"

III. Ménière's Syndrome



1. Paroxysmal Whirling Vertigo. *This consists of sudden attacks of dizziness, often when the patient is at rest or asleep. The patient may feel that he himself is whirling or that fixed objects about him are whirling. The attack usually lasts for a few minutes; occasionally it is severe for weeks or subacute for months.*



2. Subtotal Hearing Loss.

Deafness will usually affect the high tones and it may be unilateral or bilateral. Sometimes the hearing loss is severe and also progressive.



3. Tinnitus. *This is usually unilateral and present in the ear with greater hearing loss and is without a definite pattern.*

Fewer diagnostic errors¹ will result if a "triad of symptoms" is required of patients with suspected Ménière's syndrome. These are the symptoms of typical Ménière's syndrome:

1. Severe paroxysmal vertigo which may be of two types; either the patient feels that he is whirling or that objects about him are whirling.
2. Fluctuating subtotal hearing loss, usually affecting the higher tones, is noted at the same time as vertigo.
3. Tinnitus, usually unilateral, is associated with the deafness and dizziness.

With Ménière's syndrome there is no definite localization² by the Bárány (vestibular reaction) test and results of the caloric test are not diagnostic. Physical examination should rule out disease of the central nervous or cardiovascular systems before a diagnosis is made.

"Treatment with Dramamine® . . . is effective³ in aborting and preventing attacks of Ménière's syn-

drome . . . will prevent or arrest attacks of vertigo. It will also reduce the intensity of the tinnitus and so may save some of the hearing in the affected ear."

Dramamine is recommended for Ménière's syndrome as the sole therapy or in combination with other treatment programs.

It is a therapeutic standard also for motion sickness and is useful for relief of nausea and vomiting of radiation sickness and fenestration procedures.

Dramamine (brand of dimenhydrinate) is supplied in tablets (50 mg.); Supposicones® (100 mg.); ampuls (250 mg.); liquid (12.5 mg. in each 4 cc.). G. D. Searle & Co., Research in the Service of Medicine.

1. DeWeese, D. D.: Symposium: Medical Management of Dizziness. The Importance of Accurate Diagnosis, Tr. Am. Acad. Ophth. 58:694 (Sept.-Oct.) 1954.
2. Jackson, C., and Jackson, C. L. (editors): Diseases of the Nose, Throat, and Ear, Philadelphia, W. B. Saunders Company, 1945, pp. 368; 414.
3. Queries and Minor Notes: Ménière's Syndrome, J.A.M.A., 141:500 (Oct. 15) 1949.

PRESIDENT'S ADDRESS

"AND he said unto them, Where is your faith? and they being afraid wondered, saying one to another, What manner of man is this?" (St. Luke 9:25).

Doctor, where is your faith? What manner of man are you? Yes, what manner of man is a doctor? He is like other mortal men — he is warm and friendly, a duffer at golf, a sucker for uranium stocks, he loves animals, and sometimes poker, Beethoven and good scotch. But what sets the doctor apart, but not above other men?

His training and education? — probably, but not necessarily. His economic and social position in the community? No. The true answer lies in the doctor's humble devotion to his chosen work, his compassion in his ministrations to the sick, his humility and his faith.

And where is your faith?

Being entrusted with the health, lives, and happiness of patients requires more than the accumulation of a mass of knowledge of diseases, and the exercise of care and skill in treating these. I hold that our responsibilities do not end with the minds and bodies of people; we are also responsible for something intangible — but nonetheless precious — faith. To give faith one must have faith. In St. Luke 9: 1 and 2: — "Then he called his twelve disciples together, and gave them power and authority over all devils, and to cure diseases, and he sent them to preach the kingdom of God, and to heal the sick."

Despite all of our training in science, and our knowledge of the atom, and the structures of physical things, — a doctor has to believe in a Supreme Being. He has to believe in the Fatherhood of God, and the brotherhood of man. He needs this faith because he must deal with the inescapable responsibility of life and death. The surgeon who holds another's life in his must have faith; so must the psychiatrist who controls the peace of mind, the obstetrician who users a delicate life into this world, and who gently slaps the breath of life into the babe. And so it goes, — the pediatrician, the internist, the generalist, and so on. Nor can even the dermatologist enjoy the false luxury of cynicism.

I do not ask you to be ostentatious in your manifestation of your faith; you need not necessarily go out to **preach** the word of God. Rather leave that to the men of the cloth. But practice the word of God, and manifest your dedication by exhibiting true compassion and humility. But practice it in your own way and in the faith of your own choice. And you should not feel that your training in the sciences need alienate your religious tenets. Science can often tell us how to get what we want; religion at its noblest reminds us about what we ought to want.

Surely, some of you may now be saying "Ah, Podolsky is mouthing a lot of inane idealisms." This is the same idealism that I cherished as a young starry-eyed medical student, — and so did you — if you will have the courage to admit it, and I proudly admit that I still nurture it.

I'll also admit that it is sometimes difficult to hold to these ideals after a trying day in the hospital, office and on house calls, especially at night, listening to complaints, real and imaginary, suturing the cuts of drunken brawls, setting the broken bones of people racing to hell in high speed death weapons, and treating diseases of the sinful as well as of the innocent. I'll admit that when one is tired and discouraged, compassion and charity might wear a little thin.

And now a few words to those who consider the charitable aspects of our practice as **duty**, not as a God-given privilege. It is true that our profession is also our means of earning a living, and accumulating some of the material things on this earth. However, the richest doctor is the doctor who gives most of himself. In these days of high income taxes, one can't keep much anyway, even though a doctor likes nice things for his family, and some of the luxuries for himself. I recite the parable of the fox from Aesop's fables; "It may be likened to a fox which found a vineyard fenced around on all sides; but there was just one hole. He wished to enter through it, but was unable to do so. What did he do? He fasted three days until he became very thin, and then went through the aperture. He feasted there and, of course, grew fat again, when he wanted to go out, he was unable to pass through the hole. So he fasted another three days, until he had grown thin and then went out. When he was outside, he turned back and, gazing upon it, cried, "Oh vineyard! What use have you been to me and what use are your fruits? All that is inside is beautiful and praiseworthy, but what benefit has one from you? As one enters so he comes out."

What a doctor is able to gain and should strive to accumulate during his lifetime is a store of worthy actions. Such a treasure preserves its value even after death.

By adhering steadfastly to our faith, and to our seemingly puerile medical student idealism, we shall then deserve the immortal tribute to the physician penned in the book of Ecclesiasticus, "Honor a physician with the honor due unto him . . . for the Lord hath created him. For of the Most High cometh healing . . . the skill of the physician shall lift up his head; in the sight of great men he shall be held in admiration."

Dr. Harry Thompson and his predecessors have set a fine and noble example; the goals of this office are high, but with the kind cooperation of each member, and with continued prayers for divine guidance, I accept with great humility the honor and privilege of serving you as president for the ensuing year.

ABE I. PODOLSKY

President Arizona Medical Association

Editorial

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The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
5. Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.
6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.
7. Exclusive Publication—Articles are accepted for publication on condition that they are contributed solely to this Journal. Ordinarily contributors will be notified within 60 days if a manuscript is accepted for publication. Every effort will be made to return unused manuscripts.
8. Illustrations—Ordinarily publication of 2 or 3 illustrations accompanying an article will be paid for by Arizona Medicine. Any number beyond this will have to be paid for by the author.
9. Reprints—Reprints must be paid for by the author at established standard rates.

The Editor is always ready, willing, and happy to help in any way possible.

EDITORIAL

A PRINCE HAS FALLEN

"Know ye not that there is a prince and a great man fallen this days in Israel?"—II Samuel 3:38

ARIZONA has suffered a great loss in the passing in early April of this year of our friend and Associate Editor, Dr. W. Warner Watkins.

Those of us who knew and loved him need no reminding that here indeed was "a prince and a great man". Those who are newer among

us, and did not know him so well, will be surprised at the account of his life and accomplishments printed elsewhere in this issue. It is amazing that one man in one lifetime could have done so much for so many. And be assured from one who knew him well, loved him greatly and owed him much, that this account, as comprehensive and excellent as it is, only scratches the surface of the multitudinous interests and good deeds of this genius who lived among us.

He will be missed — greatly — not only by his family and numerous friends but by the medical fraternity of the County, State and even the Nation. Also by the numerous Christian projects with which he was associated, civic organizations who knew and valued his action and advice.

It is comforting to know that through these many things the denign and humanitarian influence of Dr. W. Warner Watkins will live on — and on.

LETTER TO THE EDITOR

Dr. R. Lee Foster
Arizona Journal of Medicine

The Arizona Tuberculosis and Health Association will miss the wise counsel of W. Warner Watkins, M.D., President Emeritus, who passed away at his home 206 E. Moreland, Phoenix, last evening.

The continued active leadership of Dr. Watkins from May 22, 1909, when the "Arizona Association for the Study and Prevention of Tuberculosis in affiliation with the national association" came into being until his voluntary retirement from the Directorate of our Association in 1954, kept the voluntary tuberculosis effort alive in Arizona through many difficult and trying years. His interest and concern for the Association's future were evident to the end. During my last brief chat with him on March 11, 1956, he referred to items in the Minutes, articles in the "Digest" and the excellence of the program for the forthcoming ATHA-ATS meeting.

Helen E. Watkins
Arizona's Representative Director,
National TB Assn., 1945-49
Promoted Organization of Arizona
Trudeau Society 1946

TOPICS OF *Current Medical* INTEREST

RX., DX., AND DRS.

By Guillermo Osler, M. D.

Details on the Upjohn oral drug for diabetics have become available since we mentioned it last month. The drug was discovered in Germany, and is a cousin of the sulfonamides. It has been studied by Miller and Craig of Western Reserve University, and Dr. I. A. Mirsky. . . . It is not an insulin substitute, but probably acts by blocking a body process which destroys insulin. . . . It is of little value in young diabetics, and of no help in cases with ketosis, but is useful in the older and overweight cases. . . . Side effects of the drug have not been well-studied, and it is possible that better analogues will be found.

Coincident with the finding that the effluent from SEWAGE which is treated in the ordinary way contains a surprising number of pathogenic bacteria and viruses comes the word that Los Angeles is testing a method of NUCLEAR RADIATION. This is the first time that atomic energy has been tried for this purpose, and it could revolutionize the entire procedure. The experiments are to be carried out by a Pittsburgh corporation.

E. A. Busse of Tucson has reported his use of 'Salvort' (made by Massengill) in the Nov. 1955 issue of CLINICAL MEDICINE. . . . The drug contains cortisone, sodium salicylate, calcium ascorbate, and buffers. It is a combination which should be in balance, and he says it was non-toxic and well tolerated in 5 cases of rheumatoid arthritis and 5 of calcific bursitis. They made "excellent progress".

Detective work by two PHS physicians has identified the mysterious "TINGO MARIA FEVER" of Lima, Peru. Tourists have been warned away from the 'Cave of the Owls', and the cause of the hazard has been found to be HISTOPLASMOSIS. . . . Dr. Lazarus obtained soil samples and sent them to Dr. Ajello in the USPHS Communicable Disease Center in Atlanta, Georgia. Histoplasma capsulatum was found, the source being droppings from the cave-dwelling 'oilbird'. . . . This extends the frontiers of 'histo', and may help in solving the problem of epidemiology.

Readers of this column are more or less fortunate when it comes to reports of chest disease meetings. Now we have a few gems from the April Cal. TB & Health, and Cal. Trudeau meetings in San Francisco. . . . The imported guests were Dr. Herman Hilleboe, Commissioner of

Health for New York State; Dr. Max Chamberlain of New York, inventor of segmental lung resection; and Dr. Roger Mitchell, once of Trudeau San. at Saranac and now director of the Colorado Foundation for Research at Denver. Local talent filled in the remainder of 2½ days, including the famous half day of 10 minute papers. . . . **Here are a series of notes which were accumulated on various topics,** — The TB mortality is now very low, but we must find more unrecognized cases in the population, and arrange better and long-continued care of the people with active or arrested disease. . . . It is logical to treat people with anti-TB drugs who have negative chest films but newly positive tuberculin skin-tests. . . . Three drugs are still best for certain types of active disease, but INH & PAS are good for healing non-acute disease (if tolerated). . . . Patients should be sold on the need and value of PAS, a sometimes unpleasant drug. . . . Home treatment is **only** satisfactory when the disease has been controlled in a San; when the patient has been educated in a San; when the home conditions are suitable; and when wise, long-time medical care is at hand. . . . 'Valley fever' (coccidioidomycosis) is still quite a mystery disease, both from the standpoint of medical therapy and its method of spread. . . . The diagnosis and treatment of emphysema, or 'thin lung' is improving, but results are not perfect and patients find it hard to understand. . . . There are many peculiar bacilli which look like tubercle bacilli but usually don't act that way. . . . Some people have too little of a certain type of protein (gamma globulin), and develop recurrent respiratory infections as a result. . . . Dr. Brewer of Los Angeles has been working on a new 'partition' operation (at first in animals) to prevent overexpansion of the lung after resection. . . . Thoracoplasty is finding a new use in some older people, (especially the 'waterfall' operation of Drs. Jones, Robinson, & Meyer), as is the lucite sphere installation used by Dr. Cotton. . . . Almost 95% of the people who have had segmental resections (part of a lobe) are alive after 5 to 8 years, in spite of advanced disease, age, accidents, etc. Dr. Chamberlain's series has now reached 1,000 cases. . . . Removal of a small piece of lung for diagnosis is a very valuable method (and easy) when the cause of disease is not known. . . . Everyone with anything to do with prevention, diagnosis, or therapy was urged to "Get in there and fight".

Reporting of medical meetings, or diseases, or operations is very often quite accurate. The article

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on **HEART OPERATIONS** in an April Sat. Eve. Post was not only interesting but factually correct. Mr. Spencer, as we've said here before now, is a fine writer. . . . The reporter for the San Francisco Chronical who recently interviewed Dr. Hilleboe was not so good, or lucky. She made a booboo which any TB patient and most physicians would recognize, — "Dr. Hilleboe was cautious and skeptical of the value in tuberculosis therapy by a new drug from South America called Isoniazid". He wasn't cautious and skeptical; it isn't new; it didn't come from South America; and it isn't Isoniazid.

If your patients are critical about the technic used by the doctors or lab. assistants who pass **gastric tubes**, tell them how they do it in other communities. . . . Patients in V.A. Regional offices and in many V.A. hospitals are expected to pass their own tubes. And do.

Drs. Gerbode and Bailey of San Francisco have been using a **NEW ANAESTHESIA ROUTINE** in heart surgery for the past 3 years. . . . They use the standard premedication of meperidine HCl and scopolamine, followed by a light dose of pentothal. The trachea is sprayed with a cocaine solution. Decamethonium bromide (a curare derivative) is given for muscle relaxation. Then forced oxygen inhalation is begun, the patient falls asleep at once, and heart surgery is begun, often with the aid of hypothermia in young patients. . . . The effect lasts for 1½ to 2 hours. The rationale is not certain. The anaesthesia may not be deep enough for painful operations. The patient can respond to questions, and is "semi-conscious". . . . The use of oxygen, and the lack of a gas anaesthesia, results in a minimum of cardiac depression or irritability.

The Indian government placed an embargo on *Rauwolfia serpentina*. A frantic search for new plant sources has been under way, but may be relieved by an announcement from Harvard. . . . **Synthesis of reserpine** is very near says Prof. Woodward. This knowledge should help the manufacture of reserpine, but also allow composition of better compounds. . . . One could then thumb a nose at India for its dog-in-the-manger attitude.

The **BASIC CAUSE**, or causes, of **RHEUMATOID ARTHRITIS** are still obscure, but less so as research proceeds. . . . The sera of rheumatoid arthritis patients will agglutinate heterologous (sheep) R.B.C.S. The reaction is highly specific, since it does not occur in rheumatoid spondylitis or psoriatic arthritis, but does occur in juvenile rheumatoid arthritis. . . . The agglutinating factor is an englobulin; it is related to the presence of fibrinoid; and it is not suppressed by steroid therapy. . . . It is said that there are structural changes in the anterior pituitary gland of patients

with rheumatoid arthritis, as well as a 40% below normal excretion of 17-ketosteroids and an (abnormal) excretion of 17-hydroxypregnenolone. . . . Should we settle for a cure, or should we first know why and how it works.

Arizona has nine hospitals on the Dec. 31, 1955 list of the Joint Commission on **Accreditation**. There are other hospitals which may meet the standards but have not yet been inspected. . . . The list includes Flagstaff Hospital; Miami-Inspiration Hospital; Good Samaritan, Maricopa County General, Memorial, and St. Joseph's Hospitals in Phoenix; Tucson's St. Mary's Hospital and Sanatorium, the Southern Pacific Hospital and Sanatorium, and the Tucson Medical Center.

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"The following resume is presented in the hope that it will serve not only to inform our readers who were unable to attend the Seminar, but will serve as review notes for those who were. Most of the papers will probably appear in the literature at some later date, and we hope you will be encouraged to watch for them and read them when they do appear. The notes were supplied by our Editor D. W. Neubauer.

RESUME OF THE FOURTH ANNUAL CANCER SEMINAR

The Arizona Division of the American Cancer Society
in association with Arizona Medical Association

NEOPLASMS OF THE THYROID GLAND

Juan del Regato, M.D.

THE course of these tumors is totally unpredictable and frequently frozen sections prove of no value. The Delphin node in the pretracheal area may be of some value as a frozen section. Tracer doses of radioactive iodine can prove of help in that malignant tumors may not absorb the radioactive iodine in the same proportion as the normal tissue. However, a nonfunctioning adenoma or a colloid cyst can give the same result on tracer studies as a malignant nodule.

The thought of "aberrant thyroid" tissue is passing out. These are metastatic lesions and cannot be considered as aberrant thyroid. They may rest as dormant carcinoma for many years or the carcinoma that is present in the primary nodule may be dormant for many years. Graham, many years ago, advocated that a method of distinguishing the malignant lesion was by evidence of invasion of the blood vessel. This is true. However, this detection depends upon the thoroughness of the pathologist running the sections.

The treatment of choice in all of these thyroid lesions is surgery. Radiation plays only a secondary role. The surgery must be adequate and it must be wide. Shelling out any nodule of the thyroid is not advisable.

Postoperative irradiation therapy is of very questionable value. Radiotherapy is indicated in the inoperable case and in the presence of the operative recurrence. The smaller amounts of irradiation that have been used in the postoperative case are of very questionable value.

The value of radioactive iodine to detect by scanning the technique the presence of metastasis is of low or questionable value. The normal gland must be destroyed first and then it may be weeks or months later before the metastatic nodule will take up the iodine. Therefore, it is better to do surgery to eliminate the normal gland or to use one of the thyrotrophic drugs.

When this is done it is better to follow the surgery with external radiation for the metastasis, if such is feasible, and not to use radioactive iodine. The external irradiation has less danger. There is less likelihood of, for example, damage to the kidney. Radioactive iodine has some very detrimental features in addition to above. In some young females it has been used to interrupt menses and then the possibility exists that you might later deliver a monster.

The indiscriminate use of radioactive iodine, such as has been going on in many places is hyperthyroidism, particularly in the young, is too dangerous and is not the treatment of choice in this group of patients.

If radiotherapy is used, that is, x-ray therapy, use it thoroughly; not as a couple of erratic shots; larger amounts are necessary.

Herbert C. Maier, M.D.

Dr. Maier feels, as Dr. Regato, that the term aberrant thyroid should be eliminated. It is not aberrant tissue. He discussed thyroid masses in the thoracic area and it is his finding that those that exist truly in the chest are adenomas, usually benign. They tend to be a downward extension into the substernal area and apparently arise primarily from the lower pole of the right lobe. He has never seen one of these interthoracic nodules from the left lobe. Some of the patients had a mass in the neck in years past. At times this diagnosis can be suspected in mediastinal tumors in those cases where there is a mild distention of the veins of the neck. That is a questionable finding. This goiter will move with swallowing although lesions of the esophagus, particularly benign lesions of the esophagus, will also move on swallowing. Some will get dyspnea due to the tracheal compression. Pain is practically never present. Radioactive iodine is of little help in their differential diagnosis. They are usually low functioning adenomas. He does not advocate the transthoracic approach for the mass in the thorax, apparently thyroid tissue that can be felt from the cervical area.

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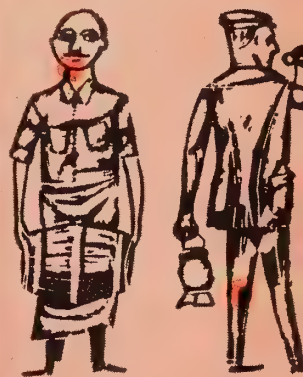
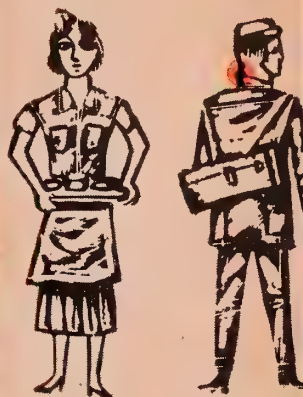
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These nodules are almost invariably posteriorly, in close association to the trachea and esophagus. Some have been misdiagnosed as aneurysms of the innominate artery. It is to be noted that the postoperative x-ray will be almost identical to the preoperative x-ray in spite of the removal of the tumor for the area will be filled with serous fluid. He never closes the mediastinal pleura completely for fear of late compression. Most of these masses derive their blood supply from the cervical area although there are occasional and important exceptions. He has noted a number of pulsating masses over the anterior thoracic area or infra-clavicular area which are metastatic carcinomas of the thyroid. A large vascular thyroid mass can give all the findings of an aneurysm and can erode bone. He has found that mediastinal exploration in carcinoma of the thyroid for advanced malignancy accomplishes nothing.

Ian MacDonald, M. D.

| | |
|---|---------|
| Diffuse thyroid hyperplasia | |
| without toxicity | 0 |
| Diffuse thyroid hyperplasia with toxicity | 0.5-0.8 |
| Nodular glands | 1-40 |
| Nodular gland with toxicity | 1 |
| Nodular gland without toxicity | 2.5-40 |
| Single nodule | 8-24 |
| Multiple nodules | 2.5-17 |
| Nodules in children | 19-40 |
| Nodules in female | 3 |
| Nodules in male | 16.6 |

Papillary adenocarcinoma makes up approximately 46% of all cases, follicular carcinoma 7%. These two groups making up more than 50% of the malignancies. They are biologically favorable and are surgically curable. The solid carcinoma, spindle cell, Hurthle cell, squamous carcinoma—this group lumped together, 8 out of 10 will be dead within one year. The best treatment for them is biopsy and x-ray irradiation. In fact after they have invaded or extended outside of their capsule surgery may be harmful.

The extent of spread is proportional to the degree of malignancy found. In checking the mode of spread of carcinoma of the thyroid gland they will spread superiorly, laterally and inferiorly from the lateral sides. There is a pre-laryngeal spread, a pretracheal spread, a metastasis to the superior digastric nodes, to the retropharyngeal nodes, inferiorly to the thymic

area and there is actually anastomosis of the lymphatics across to the opposite side. The biological spread of papillary carcinoma is through the lymphatics. He found very limited involvement of the submaxillary area. The submandibular area had a moderate involvement. Primary metastasis was lateralward, inferior lateralward, anteriorly inferior and to the posterior triangle. He advocates a total thyroidectomy for papillary adenocarcinoma and is strongly opposed to the fractional treatment such as occurs in many cases. He found that in one-half of his cases, and this is a review of 30 cases, had multiple foci of origin. Fifteen per cent had contralateral metastasis. In many of these cases where he is doing an excision on the opposite side it is a clean out of the soft tissues to the jugular vein and not a total neck dissection. He does not advocate a total neck dissection in the absence of lymph node metastasis.

Of 60 cases reviewed he has found their age incidence was as follows:

| | |
|----------------|----------|
| 10 to 29 years | 14 cases |
| 30 to 49 years | 23 cases |
| 50 to 69 years | 17 cases |
| 70 to 89 years | 6 cases |

Of the pathological types involved:

| | |
|------------------|----------|
| Papillary | 30 cases |
| Follicular | 16 cases |
| Hurthle cell | 5 cases |
| Adenocarcinoma | 1 case |
| Undifferentiated | 5 cases |
| Lymphoblastoma | 3 cases |

In the above cases sections revealed only normal thyroid in 33 cases. Six had adenomas and in these six adenomas, two had carcinoma arising directly in the adenoma. In four there were a nontoxic nodular goiter and one had a thyroiditis. The duration of symptoms was not significant in differentiating the various types of malignancy involved.

Physical findings revealed a single nodule in 38 of the 60 cases. They found additional nodules at surgery but on physical examination 38 of the cases presented a single nodule. Eight had multiple nodules. Ten had diffuse growth and 13 had palpable lymph nodes. In the 17 cases where nodes were removed they were clinically positive in 11 cases, but metastasis were found in 16 cases of the 17 cases.

In papillary carcinoma considering 12 cases of that were clinically positive for metastasis: 43% had metastasis to the same side, 13% had

metastasis to the counter-lateral side, and 13% had metastasis to the superior cervical nodes.

In a consideration of 30 cases papillary carcinoma to the metastasis cervical nodes occurred in 12 cases; to bone in 2; to lung in 2; generalized in 1 and had invasion in 5 cases.

Papillary adenocarcinoma is a malignant problem although it may necessitate a number of years to prove so. It will be lethal in 10 to 15 years without treatment. He strongly advocates radical surgery, the fact that the thyroid is developed in two lobes is of no significance. We should not treat them as two separate lobes; we should not do a hemithyroidectomy. He believes the average survival time should approximate 30 years rather than our present of about 15 years; and we should be curing approximately 90% instead of the 70% that are being cured at present. He concludes that any goiter may contain carcinoma, particularly in the child and in the male. Definitely remove all single nodules, over 60% of the carcinomas should be curable with adequate surgery. 50% of the multifocal malignancies in origin. For the undiagnosed lump, expose, explore, remove the lump with a border, do a frozen section and if the frozen section is unsatisfactory delay surgery and await the paraffin section. But if thyroidectomy is indicated for malignancy, do a total thyroidectomy, a hemithyroidectomy is too little. For carcinoma you should not only do the thyroidectomy but should remove the soft tissue or the fat and lymph nodes from jugular vein to jugular vein. He refrains from doing a radical neck dissection unless nodes are involved.

DISCUSSION

Dr. Regato states that there is no question that radiation in itself can be carcinogenic. He will not use over 50 r for treatments of a thymic tumor or the diffuse hyperplasia noted in childhood but greater amounts have been used and may have lead to carcinoma of the thyroid. Dr. Macdonald believes that the probability of a carcinoma of the thyroid is inversely proportionate to its increase in size. He has seen no malignancy in the substernal gland. He allows 6 weeks between procedures when doing a bilateral total neck dissection. He always does a total thyroidectomy in the presence of malignancy. He does not advocate a prophylactic neck dissection. It is to be noted that he has a table set up, the Pathologist in the room with a sterile technique dissecting the thyroid gland,

inspecting it for parathyroids, and then does an implant of those parathyroids as necessary.

PROBLEMS IN THE MANAGEMENT OF NEOPLASMS OF LIVER AND PANCREAS

1 — Averill Liebow, M. D.

This is a rare problem. In 5,000 necropsies only 12 cases of interhepatic and 10 cases of extrahepatic neoplasm were found. It is primarily a disease of the 6th and 7th decades. It is two times as frequent in the United States as in Europe. The relationship of male to female of his cases involved — the intrahepatic 8 males, 4 females; the extrahepatic were 5 and 5. There is a high association, 85% of the cases had a pre-existing fibrosis for all carcinoma of the liver. The question arises — did the fibrosis exist before the tumor developed?

The various classifications are:

1. Hepatomas which are really and truly a hepatocarcinoma. Have a benign appearance at times. They are usually malignant. They are more common than any of the types. They actually may carry on liver function.

2. The adenocarcinoma which is less common and may be of ductal origin.

3. There is an intermediate type which is not surprising when one considers the liver is derived from the primitive gut.

Of the various types the hepatocarcinoma, 9 of them were intrahepatic, none extrahepatic.

Of the adenocarcinoma 3 were intrahepatic, 9 extrahepatic.

Cirrhosis was present in 10 of the intrahepatic and 6 of the extrahepatic.

It was absent in two of the intrahepatic and absent in 6 of the extrahepatic.

Hemochromatosis is common in the development of the hepatocarcinoma. It is even more common than cirrhosis. In multinodular hepatocarcinoma it is difficult to differentiate regeneration and carcinoma grossly. The spread is both by lymphatics and through the blood stream. Ninety percent of them died with metastasis to the lungs; that is, the patients with hepatocarcinoma. The blood supply to these tumors is almost entirely from the hepatic artery. A hemangioma with sclerosis can feel like a metastasis.

Tumors of the Pancreas

Malignancy may arise from the ducts or the ducts or the glands. Most commonly involves the head of the pancreas. The islets are rarely involved. Forty-three percent are a diffuse in-

volvement; 43 percent involve the head alone; 14 percent arise in the body and tail. It is to be noted that 50% of the patients with carcinoma of the body and tail will develop multiple thrombi. Many of them have a pain in the back as their primary complaint.

Islet Cell Adenomas and Carcinomas leading to hyperinsulinism from the beta cells may be due to multiple or diffuse hyperplasia.

2 — Alexander Brunschwig, M. D.

In 1911 a total hemilobectomy of the liver was performed. A patient can go along normally with only 200 or 300 grams of liver tissue remaining. There are over 1000 instances on record since 1888 of removal of tumors of the liver. He frequently will do a compression resection of the left lobe by compressing between the index finger and the thumb and so obtaining hemostasis until the vessels can be clamped. If a right or left lobe is resected he goes down along the falciform ligament attempting to get the artery and vein; the hepatic veins above are gotten by going through the chest and turning the right lobe of the liver over. There are fundamentally avascular planes allowing for eight lobes of the liver but it is very difficult to differentiate these planes. He resects from one side or the other of the falciform ligament. He advocates excising metastasis to the liver. Pain is noted whenever the Glisson's capsule is stretched or torn. The liver does not necessarily hypertrophy after a lobe is removed. He had a 27% mortality on liver lobe resection, 43% mortality for right lobe resection. He believes that 80% of the liver can be removed and the organism survive. In fact, it is his belief that the human can survive with less than 20% of the liver functioning. Hemorrhage has been the primary problem of the liver resection. He has not had late hemorrhaging. The inferior vena cava can be clamped and the porta hepatis compressed for up to 25 minutes to permit the surgery to be performed. Infection has not been a problem. Dogs liver is highly infected. That is not true of the human liver which is relatively sterile.

LYMPHOMAS

1 — Alfred A. Gellhorn, M. D.

Stated that there are 25,000 new cases of lymphomas and leukemias reported per year. Of the hospitals he reviewed, and these to a degree had to be considered hospitals doing a great amount of malignant surgery, between

9 and 13 percent of the patients coming to necropsy did so because of lymphomas or leukemias. It is extremely important to institute the treatment while the lesion is still localized. In lymphosarcomas the histological type is of extreme importance. The giant follicular is more benign. However, it may be an early phase of the later lymphocytic or reticular cell form.

2 — Alexander Brunschwig, M. D.

In discussing the place of surgery and the definitive treatment of lymphomas he stated that obviously radiation is the principal arm of treatment. There are certain limited phases, however, as in the involvement of neck glands or abdominal viscera excision of the lymphoma can be considered. Obviously, this is to be discouraged once leukemia has developed. In the neck Hodgkin's disease or the lymphoblastic sarcomas with one or more positive nodes, excision can be carried out. This is true in the axilla, groin and as stated above, the neck. A lumpy tumor of the GI tract one must consider as a lymphoma, and consequently treat it with a wide resection. He believes that the primary lymphoblastoma of the abdominal viscus is of a different identity than the same lesion occurring in the lymph nodes of the neck.

3 — Herbert C. Maier, M. D.

In diagnosing and treating intrathoracic lymphomas he does a scalene node biopsy. Frequently when there is mediastinal involvement there are cervical nodes involved. He has surprisingly seen small cell carcinomas regress markedly with as little as 600 r. Therefore, he finds it extremely important to differentiate the lymphoblastoma group. He has found many of his thymic tumors extremely low in the chest even in the precordial area. These localized lesions in the chest can run an extremely long course.

4 — Juan del Regato, M. D.

In discussing the lymphomas stated that those of the orbits are invariably of a benign type and radiation therapy will result in 100% cure. They do not metastasize. The lymphomas of thymus, of the stomach do not metastasize and can be cured by radiotherapy as well as by surgery. The pedunculated lymphoma of the rectum is benign and should be handled with irradiation.

The lymphosarcoma of the pharynx are highly curable by radiotherapy if there are no metastasis. The lymphosarcoma of the small intestine



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is seldom cured. Hodgkin's disease can live for 25 to 30 years with treatment properly handled. You need to follow them closely. He believes you can sterilize the local lesion in lymphosarcoma with radiation alone. In radiotherapy in Hodgkin's disease, one can anticipate a 70% five year survival and a 37% ten year survival.

5 — Dr. Gellhorn on chemotherapy of the lymphomas states the localized lymphosarcoma and Hodgkin's are obviously difficult to differentiate. If there is localized disease do not use the nitrogen mustard. Nitrogen mustard has never cured and is used only in the desiminated problems.

In constitutional Hodgkin's disease he uses:

| | |
|----------------------------|---------------------------------|
| Nitrogen Mustard | IV in 0.4 mgms. per Kilogram |
| TEM | Orally 15 to 20 mgms. |
| Tetpa | IV 10 mgms. daily |
| Phenol Nitrogen Mustard | Orally, 10 mgms. daily |
| Or CV1348 | |

The choice of drugs used in generalized Hodgkin's, in acutely ill most rapid remission is obtained with Nitrogen mustard. It can be expected in 48 to 72 hours to have the patient afebrile but the patient will have an extremely rough time with nausea, vomiting, and depression of bone marrow. The nausea and vomiting can be controlled with Thorazine. In the less acutely ill use TETPA Intravenously with no reaction and slower response. For the smoldering disease he uses TEM. Slower effect again and noting it in 10 to 14 days. The CV 1348 is not satisfactory for Hodgkin's disease but is better in lymphosarcoma. The histological type is important. The giant follicular is relatively benign until it converts. The disseminated reticular cell sarcoma notes one-third improvement only with Thiotepe.

The adrenal cortical hormones as Cortisone are helpful but exacerbation occurs as soon as they are discontinued. Hazards are dissemination of tuberculosis, hemorrhage and perforation of the GI tract and development of Cushing's disease. Metacortone has less salt and water retention. The over-all results of the two drugs are fundamentally the same. Either one is only effective as long as treatment is continued.

There has been no prolongation of life by

the use of the chemotherapeutic agents in this group of diseases but they have been able to keep the patient asymptomatic for a greater length of time.

DISCUSSION OF LEUKEMIAS

1 — Alfred A. Gellhorn, M. D.

The acute leukemias of childhood and adulthood are totally different. In childhood he uses Aminopterin or a folic acid analogue or the Purinthol or Cortisone. The folic acid antagonists brought about 30 to 60% remission, about one half will present a complete change. Seventy to 80% note a remission with Cortisone. Forty percent remissions noted with Mercaptopurine. In the desperately ill use of the adrenal cortical steroids. In the less ill Mercaptopurine and the folic acid antagonists are considered too toxic and are no longer used. Prior to 1947 a 5% survival for one year were noted. Since 1951 50% survival for one year; that is, of the acute leukemia. With each compound one gets a re-exacerbation and the drugs become less effective until after a time it is no longer effective.

Acute leukemia in adults — the above compounds are not helpful. ACTH and Cortisone are used and have resulted in no significant modification of disease. Recently they have tried massive cortisone or Metacortone, using 6 grams of Cortisone daily for 10 days and 1 gram daily of Metacortone for 10 days and did bring about remissions in some cases. In 16 adults with acute leukemia they had four complete hematological remissions, 4 partial remissions and 8 had no effect. However, they did have some major psychosis, GI hemorrhage, perforation and a severe diabetes that was difficult to control.

2 — Juan del Regato, M. D.

Radiotherapy of the acute leukemia in childhood has no place. Acute leukemia of adults has similar results as with chemotherapy. In chronic leukemia radiation is the treatment of choice and he uses total body irradiation. Some chronic lymphatic leukemia patients need no treatment and should only be followed, ie. if they are asymptomatic. However, in both chronic lymphatic and chronic myelogenous leukemia he uses total body irradiation. He treats them daily for two to four weeks, then one time per week for the rest of their life and feels that this is the preferable form of treatment for leukemia. He can treat them for as long as five years, one time a week, with no

detrimental results. Radioactive phosphorus has the same effect as total body radiation but it has no advantages and some very definite disadvantages.

Alfred A. Gellhorn, M. D.

Chemotherapy of chronic leukemia — he feels that he can obtain the same end as radiation therapy. Winthrobe has converted to chemotherapy agents for his chronic leukemias. CV 1348 of the Mustard family is best for chronic lymphatic leukemia. He treats the symptomatic only and ignores the asymptomatic other than following them. This drug has the danger of elevating the uric acid in the blood and they are on relatively forced fluids. It can be given by mouth. There is no nausea or vomiting. In 18 patients he has obtained three excellent results, 8 good results on an objective basis, only 8 good results on a subjective basis and in 9 no results.

Myleran is a splendid drug for a chronic myelogenous leukemia. Give 10 mgms. daily. You can get some hematopoetic depression. Depending upon the series studied the effectiveness of the drug is as follows:

| | % remissions | duration of remission |
|----------|--------------|-----------------------|
| 19 cases | 74 | 0.21 months |
| 11 cases | 84 | 0-19 months |
| 11 cases | 100 | 2-21 months |
| 21 cases | 81 | 0-48 months |

The source of the above drugs are all by Burroughs Wellcome.

It has been brought out that steroids may actually accelerate the acute myelogenous leukemia but at times they have obtained remissions.

EVALUATION OF RECENT TREATMENT OF CANCER OF STOMACH

Leo G. Rigler, M. D.

He believes there is a factor as biological predestinationism. It is noted that five year cures have shown a very definite increase within recent years. This is particularly true if the lesion is 5 cms. or less; and the rate of cure of the lesions that are only 1 cm. in diameter is showing a definite improvement. They are now studying the asymptomatic patient and within recent years have noted the 5 year cure rate to go up from 5 to 12%. The prime change in treatment is that they are now operating upon

a greater number of small lesions. These small lesions are obtained by doing GI series on all patients with a gastric acidity of less than 20 units. They also check their pernicious anemia patients closely by doing a gastrointestinal series twice a year. It is his belief that the benign tumors or polyps may be precursors of carcinoma although he has seen some cases where the benign lesion has remained in place for many, many years.

| | Number of patients Polyps Carcinoma | | |
|--|---|---------|--------|
| Achlorhydria | 1399 | 47-3.4% | 12-.9% |
| Hypochlorhydria or less than 20 units of acidity | 271 | 3-1.1% | 2-.7% |
| Pernicious Anemia | 77 | 5-6.5% | 4-5.2% |

It is to be noted that the above figures are obtained in asymptomatic patients. Again considering 18 patients that were operated upon in this asymptomatic group, at the time surgery was performed there was a lymph node involvement in 9 cases and no lymph node involvement in 9 cases. It is his belief that the group with no evidence of lymph node metastasis have a 50 to 60% chance for a five year cure.

They have found that of the asymptomatic patients 2/3rds will have negative nodes. Those with mild symptoms, 2/3rds will have negative nodes and those with frank symptoms all will have positive nodes and with positive nodes the chance for cure is very little.

In considering 900 cases of gastro-intestinal series, 866 of them with carcinoma of the stomach and symptomatic, 16% of them had negative nodes. However, of 41 cases where they had done a normal GI series and then developed a positive finding on a second GI series, in more than 6 months or less than 4 years, they found that 95% of this group of 41 cases were operable and 51% had negative lymph nodes. He believes that if early cases can be obtained one can anticipate a 26% cure rate.

Alexander Brunschwig, M. D.

Feels there is entirely too great a defeatist attitude with reference to those patients that have advanced malignancy. The first gastric resection was performed by Billroth in 1881. Brunschwig has a number of cases where he has had 11 year cures for apparently a totally

inoperative case. He does a total gastrectomy only if the lesion is very high. He has found that the low lesions in the stomach extend anteriorly and posteriorly. Therefore you must clean off the celiac axis, frequently take along the pancreas and at times the transverse colon. It is his belief that resection of neighboring viscera or excision of neighboring viscera where they are involved by invasion is totally justified. It is bad surgery to separate by blunt dissection organs that have become adherent to each other and then to take a frozen section, for this is not encompassing the growth. It is necessary to get around the growth.

If one is willing to operate on recurrent carcinoma of the stomach, palliation is possible. Cure is not. One can only expect several months more survival for that individual.

In a review of cases, particularly extensive gynecological procedures, they have found where extensive surgery was performed then flushed the abdominal cavity with saline, collected the saline, spinning it down, they have found malignant cells or clumps of malignant cells in at least 50% of the cases. Many of these potential transplants do not grow.

In treatment of carcinoma of the pancreas Dr. Brunschwig again believes that there is entirely too great a defeatist attitude in the United States. The initial procedure advocated by Whipple in 1935 was extended somewhat by Brunschwig in 1937. He does not believe that this procedure is limited to carcinoma of the Ampulla, but that it is applicable to carcinoma of the head of the pancreas. He is totally incapable of separating the two at the time of surgery. He does not advocate biopsy of the pancreas, too often it is diagnostic of pancreatitis only, a problem that is really just in conjunction with the malignancy. He encourages resection for ampullar lesions, lesions of the head of the pancreas, and lesions of the bile ducts. He does not implant the pancreas. He feels that man does not need pancreatic juice. There will be a pancreatic fistula for a short period of time and then it will close off. Where necessary to give supplemental treatment for digestive factors he gives Pancreatin, 3 to 4 teaspoons full tid, pc. In a review of the literature he has found 26 cases that have survived five years or more after pancreaticoduodenal extensive surgery and over $\frac{1}{2}$ of these had the primary lesion in the head of the

pancreas.

Discussion

Dr. Rigler in discussing ulcers of the stomach feels that in 96 to 98% of the ulcers that do not obviously show a tumor, where one is wondering whether this ulcer is benign or malignant, in 96 to 98% of these cases the lesion will be benign and you are more likely to error in calling it carcinoma needlessly rather than calling it malignant when it is benign. He has found that the ulcero-carcinoma group may improve symptomatically but the x-ray findings do not subside on medical management. So this group, check by x-rays in 3 weeks for regression.

Dr. Brunschwig operates upon the gastric ulcer with achlorhydria immediately. He has found that acinar tissue will atrophy after ligating the pancreas at the site of resection but the patient does not become a diabetic. He has had little experience with exfoliative cytology in carcinoma of the stomach. If the hepatic artery is cut relatively low and ligation carried out, anastomosis is usually satisfactory and no difficulty develops. However, if there is a relatively high ligation and Anastomotic channels will not develop the results can be quite dire.

CANCER OF SKIN

Juan del Regato, M. D.

This was a discussion entirely from the view of the Radiologist and not of the Dermatologist or Surgeon. This is the most frequent form of cancer. 97% of it occurs from the collar up or from the cuffs down; three percent over the remainder of the body. Farmers develop the lesions usually not before their late 30s and in sailors it is likely to occur slightly earlier. No discussion was given to the melanoma which is the domain of surgery entirely. Cancer of the lower extremities is usually secondary to scars as from burns. There certainly is a predisposition in the blonde and redhead to malignancies of the skin.

Types of cancer are basal cell, squamous cell and adenocarcinoma. The latter is rare. Usually occurs in the scalp or in the axilla and should be treated with surgery. Carcinoma on the basis of the scar is usually or almost invariably squamous cell CA. Carcinoma around the eyelid, the alae of the nose or the skin around the lips is 90% basal cell CA. Carcinoma on the back of the hands is 90% squamous in type.

Most of the skin carcinomas are relatively benign in their course and death seems to only occur in those cases where there has been treatment that has been inadequate. He biopsies all cases prior to treatment and does not feel that he alters his treatment particularly in relation to the various types of tumor pathology encountered.

Zinc chloride paste, of course, has been used. It is primarily used by quacks. Electrocoagulation is used but it is not proper for it modifies the specimen and one cannot get an adequate and complete diagnosis. The primary advantages of surgery are that it is expedient, leaves little scar and you get a good check pathologically. Radiotherapy at times, however, will leave a lesser scar. Where the lesion is small the biopsy excision is the treatment of choice. The alae of the nose, the ear, the eyelid have less scar with radiation and so irradiation is recommended for this group. Radium therapy can do nothing that roentgen therapy has not done and he strongly recommends fractionated radiotherapy, particularly around the eyes. It is obvious that surgery is better than bad radiotherapy. He has found his percentage of cures quite high with few patients lost and those lost are due to squamous cell carcinoma. He is strongly of the belief that no matter how extensive the basal cell carcinoma, it is curable by irradiation. In the early decades of life the numbers of basal cell carcinoma exceeds squamous cell. This has a reversal in the later decades of life when the squamous cell is the more frequent. Three out of four of the people involved are men. When the women do develop it they are a little more inclined to have it earlier in life. For the dorsum of the hand he recommends excision and grafting.

Almost all of the lesions of the lower leg will drain to the inguinal or femoral area, the popliteal are draining fundamentally to the heel.

| Site | Male | Female |
|------------------|------|--------|
| | 3 | 1 |
| Ears | 85% | 15% |
| Forehead | 43% | 57% |
| Eyelids | 69% | 31% |
| Alae of the nose | 65% | 35% |
| Cheek | | |
| Preauricular | 87% | 22% |
| Anterior | 78% | 22% |

In considering 1500 basal cell carcinomas 97% of them occurred in the exposed areas.

In vasion of the cartilage by carcinoma is not a contra-indication to radiation therapy. He uses fractionated treatment, possibly giving it daily over a six weeks period. He does not obtain a cataract by the use of fractionated roentgen therapy as is so frequently the result with radium therapy. The posterior aspect of the ear is usually a basal cell carcinoma where the anterior aspect is a squamous cell.

In considering 800 cases of basal cell carcinoma treated with roentgen therapy they had 60 recurrences; all of them responded to additional therapy. He has found an incidence of squamous carcinoma of the skin having a metastatic rate of about 12% in contrast to the increased rate of metastasis to be noted in squamous cell at other sites, such as the tongue where the metastatic rate is about 66%.

Dr. Portmann recommended the consideration of contact irradiation in these various malignancies with a high rate of exposure but low absorption. He did not agree with Dr. Regato on lesions of the ear, strongly recommending that they be removed surgically for fear of a perichondritis.

REVIEW REPORT OF AMERICAN CANCER SOCIETY

Brewster S. Miller, M. D.

Dr. Miller brought out the following factors: Carcinoma is now claiming about 230,000 lives per year. It is the second greatest cause of death, rising from a position of 8th in 1900. Of our present population in the United States, 40,000,000 can anticipate that they will contract some form of cancer in time. That is one in four. Of the patients that do get a cancer, 1 will be satisfactorily treated, 2 will die and 1 will die that could have been saved.

25% Cancer of the Cervix is now cured, 80% should be by early detection.

5% Cancer of the Lung is now cured, 50% should be by routine chest examinations.

35% Cancer of the Breast is now cured, 70% should be by regular examination.

13% of cancer of the rectum is now cured, 70% should be by regular digital and proctoscopic examination.

35% of Cancer of the Oral cavity is now cured, 65% should be cured.

85% Cancer of the skin is now cured, 98% should be.

The income of the American Cancer Society last year was \$24,000,000. 25% of this was devoted to research or \$6,000,000. 12% was devoted to the National Office, or \$2,880,000. 3% was given to medical grants and fellowships or \$720,000. 60% remains to be used locally or \$14,400,000.

In breast lesions that are less than 2 cms. 75% had a five year survival. In patients seen by Dr. Haageson he has found that 27% were given wrong advice by their local doctor and satisfactory or proper treatment was delayed for this reason. 22% of patients who came with carcinoma of the rectum had had previous surgery for hemorrhoids and proctoscopic had not been done.

They now have 22 films available, Kinescopes, available through the American Cancer Society which run 29 to 52 minutes each and are a course in cancer therapy in themselves.

Present Research has shown that if both parents in mice are cancer susceptible 85% of the offspring will develop cancer. If one of the parents was cancer susceptible and the other with a normal resistance, only 10% of the offspring will have cancer. Or, if both of the parents are cancer susceptible and the offspring are removed to a nursing mother, that is a nursing foster mother, only 10% will develop cancer. This milk factor that apparently seems to be present under the electronic microscope appears to be a virrus. If the ovaries are removed in the cancer susceptible mice very early, 35% do get cancer. Therefore it seems that the ovarian hormone does play a role.

We are developing what may be called a vertical epidemic of cancer in contrast to our usual consideration of a horizontal epidemic of any of the infectious diseases.

Over 500 chemical coal tar dyes have been found to be carcinogenic. One of the prime ones, the methycholantrene group is definitely related chemically to the male and female sex hormones.

In a Memphis screen of 70,000 females in a study of exfoliative cystology for carcinoma of the cervix they found it advisable to do 10,076 biopsies; 282 intra-epithelial carcinomas were found, an incidence rate of 26%; of the biopsies performed they found invasive malignancies in 245 or 22%.

Dr. Meigs of Boston has been considering the Sensitization Response. With a good Sensitization Response in cancer of the cervix treated by radiation they anticipate and have found they can obtain a 66% 5 year cure. With a poor Sensitization Response and radiation treatment they are getting only an 18% five year cure. If those with a poor SR are treated surgically they are getting a 59% 3 year cure and with a good RS only a 29% surgical three year cure.

He believes strongly that achlorhydria is an index for upper GI series, and he strongly recommends the use of a gastric balloon with a silk net around it to obtain exfoliative cystology of the questionable gastric carcinoma.

Cancer kills more children of school age than any other disease. It will strike two out of three homes. During the past few years the Cancer Society has been able to meet only about $\frac{2}{3}$ of the needs of the researchers involved.

PSYCHIATRIC ASPECTS OF MALIGNANT DISEASES

Alfred A. Gellhorn, M. D.

He has been impressed by the relative rarity of true psychosis in the patient with a malignant disease. He reports Robins work in the delay of consultation for obvious skin or subcutaneous lesions noted in a group of patients. It was rather remarkable in that 66% of the physicians who had these lesions delayed obtaining a consultation for 3 months while the lay public only 45% of them delayed for 3 months. Therefore, having the patients well informed is not enough to get to the proper and early handling of malignancies. This delay on the part of the patient in obtaining consultation is not due to an indifference. It is an emotional attitude, and attempt to keep the world together by avoiding or ignoring.

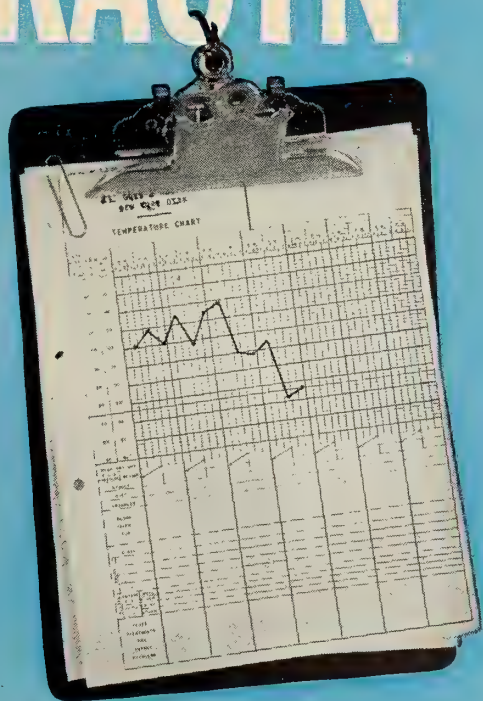
In considering the psychological problems of patients with incurable carcinoma he has found that the patient rarely asks for his specific diagnosis. They seem to "not want to discuss."

The type of response will vary. There is the patient who accepts the diagnosis and continues with little difference in modification of his routine. This makes up a small group of patients. A much larger group have a regression from their adult patterns to a state of dependency, and this state of dependency is frequently turned to the physician. These patients will frequently rebel. There is an overt hostility and again this hostility is likely to be directed against

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their doctor. This can only be tolerated for so long by the patient and he is then inclined to some form of substitution for these overt hostilities, such as impatience which is a rather thin disguise. Or, he may reject the physician and all MDs and turn to some cult or another group. Many have introspection with a development of blaming themselves. This group, in some cases, becomes quite depressed and have suicidal tendencies. Or, the hostility may be expressed against the family rather than the MD.

Our function as their doctors assumes two roles; first, we must be understanding and so can prevent this adverse psychiatric reaction in many cases. Most important, we cannot reject the patient. They must receive time, attention and thoughtful care such as we would give to the patient who we can really help and treat. These patients can be helped but to do so necessitates attention, time and thoughtful care.

Ian MacDonald, M. D.

He immediately brought up the question of what to tell the patient who has carcinoma. He tries to evaluate the emotional status of the patient along the following lines: "Do they have the capacity to receive bad news? Do they need to know to properly adjust themselves or their affairs?" To obtain this knowledge necessitates the development of considerable rapport.

He finds that in trying to evaluate patients along this line that they fundamentally fall into four groups:

1. "The emotional sissy." This makes up a small fraction of the patients who are incapable of knowing the truth and accomplishing an adjustment. They should not be told and it is to them that he does outright lying.

2. At the other end of the scale there is the "tough guy". They are frequently active, busy, impatient males. They have concern and apprehension but do not show it. He adopts the opposite extreme to the "emotional sissy". Dr. MacDonald has found that he must use the brutal approach on many of these patients who are tough and frequently hostile characters forced into the office by their wives. He tells them as frankly as he can what his diagnosis is and what he feels must be done about it.

3. The great majority fall into an intermediate group. To these he does not volunteer information and feels that the doctors should wait until questions are asked of him to present the

information and then judge what and how he should best present it.

4. Finally, there is the patient with the "disarming front". They are frequently "the charmers of the world". They have a light wit. They state they want to know the exact truth and don't really want to know the truth at all. They are the most difficult group to detect.

The management of the patient prior to definitive diagnosis and treatment presents some problems. You are in a phase when you do not know the diagnosis so it is folly to give them a hint of your suspicion. They must be told that an exact diagnosis cannot be made before microscopic examination of the tissue. He is inclined to tell them he believes it is not a cancer but includes malignancy in his discussion of a differential diagnosis. The patient must be properly prepared for major and at times mutilating surgery. Secondly, the doctor must protect himself medico-legally to perform these extensive procedures should such become necessary. One should delay, if possible, mention of radical procedure even going to the hospital the evening prior to surgery and going there as late as possible.

In the postoperative patient some member of the family must know the entire and true status of the situation but he always gives the patient the most optimistic story possible. Do not give the patient any percentage statistics, but they may be given to the family, but the patient never desires to be known as a statistic.

In handling the incurable cancer and discussing it with the family he gives a range of prediction to prognosis but is never specific. Always leave a back door open for an unusual response or even that rare spontaneous control of a malignancy, for which we have no answer.

You must keep doing something for these terminal carcinoma cases or the majority of the patients will go to a quack. If a course treatment is not pursued they will feel that they have been forsaken by their doctor. He uses steroids, typhoid vaccine, etc., etc. But, "never give the patient or the family the impression that you have closed the door." When the very terminal phase is reached he strongly advocates "snow them under with sedatives and narcotics. Do not transfuse in this phase and do not give additional supportive help".

In discussing the advisability or necessity of super radical surgery he feels that one must

get a good evaluation of the psychic status of the patient and he filters out those patients who are incapable of tolerating and living with the mutilating procedures.

Dr. C. H. Hardin Branch

This was an extremely interesting paper and brought up many new and different concepts. He considered the possibility of emotional factors playing a role in the production of cancer. Of course, he brought up the difficulty of psycho-psychological reaction and while they may be true in one patient, they might not hold true in the second. Of course, there are the coincidental cases of carcinoma and a psychosis. In many patients a demonstrable somatic illness and even a cancer, will help some of the psychotic patients. One should evaluate the cultural group that the patient comes from for some sick roles are quite accepted in one cultural group and not at all acceptable in another. He brought up the thought that there may be some common central factor which may produce both the psychosis and carcinoma.

It has been his observation that at times there seems to be an unconscious selection of the organ involved by the malignancy such as women with carcinoma of the breast or cervix. He feels that in many cases these are patients who have had some difficulty in their feminine role. In a high percentage of cases they have had a child die in childhood or have had great responsibility thrown on them at a early age of handling children.

In a consideration of the cancer phobe which Dr. Macdonald had mentioned as being a problem also and after all, they can develop cancer too. He felt that at many times you could spot the cancer-phobe by asking them what they think of cancer. What would it do to them. Obviously this group of patients are usually in the hypochondriac group. They will examine themselves extremely and excessively. They will usually describe the malignancy as a rotting away in contrast to the patient with a malignancy who will give you a specific complaint.

He has found that diagnostic procedures in themselves can be extremely traumatic.

Frequently patients will infer and use terms of which they have no understanding and give you a misconception of their knowledge of their exact status.

He brought up an unusual factor in "the

emotional involvement of the physician." We have tended to ignore the fact that most physicians have their own neuroses. The doctor in himself tends to be an obsessive-compulsive neurotic, a neuroses that is characterized by repeating procedures or doing something about it. Therefore, since most medics are of this emotional makeup plus a work that demands "doing something about it", the doctor himself can become quite frustrated when he can do nothing and it may lead to a rejection of the patient with incurable cancer, and they are a group that need help.

The psychiatrist has no gadgets to interpose between himself and the patient. Fortunately the surgeons and other physicians usually have. However, these incurable malignancy patients depend upon your personality and not by the interposition of gadgets. If the gadget will help, all right, but your personality will have to be the factor to carry the patient. The patient is depending upon this relationship between two human beings to meet their needs.

They carried on a study of 48 patients with malignancy as to what these cancer patients feel. 39 of the 48 knew what they had and so expressed it. 9 denied that they had any illness at all. They justified their admission to the hospital by stating they needed to rest, were in for arthritis, etc., etc. Some quoted a marked depression and fear, distrusting not only their own doctor but all doctors. This latter group of 9 pictured malignancy as dirty, nasty, spider like and thought in some way or another sin was associated with it.

What do these patients fear? They do not fear death. "They fear dying," to be lonely, hurting, incapacitated, isolated. Since they fear these factors, they are the factors to handle in helping the terminal malignancy.

For all of these patients you must keep your lines of communication open. Tell them what you know, that you will help them all along the way. If the word cancer is used be sure the patient knows what it really means and not an association with sin. These patients are quite aware of the problem. Suddenly in a family where their complaints have been ignored they are given every consideration as to the "extra cup of coffee", etc. They will realize the situation so you must tell them and have an understanding attitude. "Tell them what the score is and don't let the patient be lonely."

THE AMERICAN COLLEGE OF PHYSICIANS

The American College of Physicians held its Thirty-seventh Annual Session at Los Angeles, Calif., April 16-20, 1956, with a gross registration of over 4,500. Dr. Walter L. Palmer, of Chicago, was inducted as President. Other officers elected were: Dr. Richard A. Kern, Philadelphia, Pa., President-Elect; Dr. Chester N. Jones, Boston, Mass., First Vice President; Dr. George H. Anderson, Spokane, Wash., Second Vice President; Dr. Truman G. Schnabel, Sr., Philadelphia, Pa., Third Vice President; Dr. Wallace M. Yater, Washington D.C., Secretary-General. Dr. William D. Stroud, Philadelphia, Pa., was re-elected Treasurer.

A list of new elections to membership that took place at the Session is enclosed. Fellows are indicated in FULL CAPITALS; Associates (Junior Members) are indicated in Lower Case.

ARIZONA

Donald King Buffmire — Phoenix

John Francis Currin — Flagstaff

Louis Glanz Jekel — Phoenix

MARCY LEE SUSSMAN — Phoenix

The 1957 Annual Session will be held at Boston, Mass., April 8-12; the 1958 Annual Session will be held at Atlantic City, N. J., April 28-May 2.

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BOOK REVIEWS

NEW AND NONOFFICIAL REMEDIES, issued under the direction of the American Medical Association, 1955, published by J. B. Lippincott Company, East Washington Square, and supervision of the Council on Pharmacy and Philadelphia 5, Pennsylvania. Price \$3.35.

THIS very valuable volume is too well known among the medical profession to require much comment. Year by year changes are made in the make-up of this book in keeping with the changing needs of medicine. This is the last issue of this book in which brand names of drugs will be listed. The bibliography of unaccepted products has been dropped and will not be found in this issue. Also, the physician may miss what was formerly Section B of this book entitled "Tests and Standards for N.N.R." The subject matter consists entirely of what was formerly Section A of this publication. Section B is now being published separately and is available for those whose interest includes it.

The basic purpose of this volume, I think, is expressed in these words found in its Preface, "N.N.R. provides the physician with such information concerning the actions, usage, limitations and dosage of relatively new drugs as will promote the practice of rational therapeutics."

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[ORAL] AGENT, SINCE THIS
COMPOUND CONTINUES TO
PRODUCE DIURESIS WHEN
ADMINISTERED DAILY"***

*Moyer, J. H., and Hughes, W. M.:
J. Chron. Dis. 2:678, 1955.

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W. WARNER WATKINS, M.D.
1883 — 1956

WARNER WATKINS was born in Keysville, Virginia, October 30, 1883, and died in Phoenix, Arizona, April 10, 1956.

He graduated from the Virginia Medical College May 15, 1906. Inadequate finances, at least partly due to the death of his father in his last year of school, forced him to abandon plans to study surgery under the great J. Shelton Horsley. Instead he came to Arizona, following his brother who had been a health-seeker.

After being licensed by the Territory on June 15, 1906 he reported on July 1 to the mining camp at Metcalf, Arizona. Having had no internship (none was required) he had much to learn by practice, and undoubtedly, had many "interesting experiences" such as having to set the first bad fracture he had ever seen.

On October 1, 1907 he set up practice in Phoenix. In 1911 he became medical director of St. Luke's Hospital and there opened the first clinical and x-ray laboratory in the state. Thus he became the real pioneer in Arizona in laboratory work. In 1914 he opened a private laboratory in the Goodrich Building — this was the famous Pathological Laboratory, precursor of two of Phoenix' present laboratories. His interests in radiology grew so that in 1917 Dr. H. P. Mills was brought in to the laboratory as pathologist allowing Warner to devote full time to radiology. In the 1920's he organized radiological and pathological laboratories in St. Joseph's Hospital and the Good Samaritan Hospital.

Other medical accomplishments of this great friend of ours were (1) research work on leucocytes in tuberculosis, (2) use of complement fixation tests in tuberculosis, (3) induction of the first artificial pneumothorax used in tuberculosis in Arizona (1912), (4) performance of Wassermann tests on all inmates at the State Prison and at the State Hospital (25% positive), and (5) examination of draftees in World War I by x-ray and fluoroscopy. From this last procedure, due to poor protection in those days, radiation damage ensued leading to the loss of five fingers by Warner in his later years.

Active participation in medical organizations consumed a large part of Watkins' time almost from the day he arrived in Arizona. In 1908 he helped in the reorganization of the Maricopa County Medical Society, being a member of this organization throughout the years and serving at various times as its president and as its secretary.

The Arizona Medical Association has likewise had the benefit of his membership and counsel from the early days. He served this organization as secretary in 1912 and 1913, and again in 1941 to 1943, and as president in 1918 and 1919.

In 1914 he became a charter member of the Medical and Surgical Association of the Southwest,

an organization which later became the Southwestern Medical Association. He served this group as vice-president in 1919, as president in 1920, and as secretary from 1924 to 1935.

In 1912 he aided in the organization of the Arizona Association for the Study and Prevention of Tuberculosis, a group which is now known as the Arizona Tuberculosis and Health Association. He served as its president in 1914 and as its treasurer for some 25 years.

Local and regional organizations did not, however, consume all of his time and effort for he was also active and prominent in a number of national organizations.

He became a Fellow of the American College of Physicians in 1921 and a Life Member in 1944, and served as its Governor for Arizona for 10 years. He had been a member of the American Association for the Advancement of Science since 1919 and actively participated in the formation of the Southwestern Division of that organization. In 1915 he became a member of the American Roentgen Ray Society, and from 1921 to 1923 he served that organization as its secretary and as a member of the Council.

He had been a member of the Radiological Society of North America since 1920, serving two terms as vice-president.

In 1923 he became one of the 50 charter members of the American College of Radiology, and a member of its first Board of Chancellors.

As part of his activities in various medical organizations, he contributed numerous scientific writings and served in an editorial capacity on a number of Medical periodicals. He produced more than 75 papers for publication, most of which were, in his early career, concerned with studies on tuberculosis, and after about 1915, with aspects of Roentgenology.

His assignments to editorial staffs were numerous. He served as editor of the **Arizona Medical Journal** from 1912 to 1916. In 1922 the **Arizona Medical Journal** merged with **Southwest Medicine** (taking the name of the latter) and Watkins became editor-in-chief of the combined journal, a position he held until 1935. He also served one time on the editorial board of **Radiology**.

One of his "babies" was the Phoenix Clinical Club which he organized in 1929. This is a group of practicing physicians of Phoenix and the neighboring towns who meet weekly for lunch and a discussion of medical problems — Warner called it "anti-rust". He had been president of this group from its beginning, and remained its inspiring leader to the end.

Church work and community service were an outstanding part of Warner's life.

He joined the First Baptist Church of Phoenix in 1907 and had been a pillar of the organization ever since, having served in nearly every capacity at one time or another throughout the years. Also he served as president of the state organization of the Baptist churches and on the General Council of the Northern Baptist convention for two three-year terms. At the end he was president of the Board of Education and Publication of the American Baptist Convention. He wrote one of the Church School texts for the Senior Department of the Judson Press Series, entitled "The Christian Philosophy of Life" which is used by the American Baptist Churches.

His community service activities have been numerous. For many years he served on the Board of Directors of the Y.M.C.A. and for two years he served as its president.

For some 20 years he was active on the Board of Directors of the Social Service Center.

For five years he was a member of the Board of Directors of the Urban League.

During the many years he was active on the Board of Directors of the Cook Christian Training School for Indians he served five years as president.

In 1923 he helped in organizing and became a Charter Member of the Phoenix Lions Club, serving as its president in 1928.

And during all that time he was active in the practice of his chosen profession.

* * *

"Lives of great men all remind us
We can make our lives sublime,
And departing leave behind us
Footprints on the sands of time."

It is possible that some of the younger doctors of Arizona — those who have come within the last 10 years — may not have been "exposed" to the charm of our great friend Warner. For these I am sorry. For us old timers nothing can be said well enough to describe adequately our feeling toward him. He was our friend, true and fast. He was a good doctor. He was a good citizen. He was an outstanding Christian gentleman. He was a great man.

In contemplating the life and career of Warner Watkins

"Let us then be up and doing,
With a heart for any fate;
Still achieving, still pursuing,
Learn to labor and to wait."

L. G. J.

HISTORY

FRANCIS WITHERS ALLEN was born October 9, 1873 in Callao, Macon County, Missouri. Son of pioneer parents, Francis Withers Allen, Sr. and Amanda Malvina Pearl. He died February 16, 1956.

His father homesteaded near Callao. He made this homestead into a prosperous farm where the four Allen boys and one adopted sister grew up.

Allen Senior was a teacher in his early life having graduated from Bethany College in year 1855. After the Civil War caused his school to close, he went to St. Louis and studied medicine. He practiced in Missouri until his death in 1906.

Francis Withers Junior was not strong as a child and was unable to attend school until he was eight years old. Although he could not take part in the more strenuous activities on the farm, his father believed in training his sons to work and know how to manage the farm. Francis was always interested in medicine and often helped his father, who at that time prepared many of the medicines he used in his practice in the home. Francis Junior also liked to work with the stock and other animals on the farm, treating them when they were sick and even performed autopsies when they died.

After going as far as possible in the schools in the home community, he attended high school in Moberly, Missouri for two years. He went from Moberly to the University of Missouri Medical School where he graduated in 1898. Young Francis then interned in the Women's Hospital in St. Louis, Missouri for one year.

He started his first practice in Middle Grove, Missouri in 1900. While at Middle Grove he met Essie Pearl Boyd, and they were married October 30, 1901. In 1903, the Allen's went to Chicago where Dr. Allen did post graduate work at Rush Medical School.

The family then went to Springfield, Missouri where he practiced for three years.

In 1906, young Francis went to Callao to assist his father in his practice, but was in Callao only three months when his father was stricken with pneumonia and died. The young Dr. Allen remained in Callao until

1921 when suffering from asthma, he decided to go into the Indian service. Dr. Allen had a friend, Miss Fanny Sharp, a Presbyterian missionary who was instrumental in his going into the Indian service and secured his first appointment to Fort Mohave. His first assignment with the Indian service at Fort Mohave, Arizona was for a period of six months. He then returned to Missouri, sold his holdings and returned West to a new station at Sacaton, Arizona. After one year at Sacaton, Dr. Allen moved to Tucson in 1923 to provide the advantages of high school and the University for his growing family. In Tucson, the Allen's moved to 401 E. Speedway, which has been the family home since that time.

In 1935, Dr. Allen was appointed to fill out the term of Dr. Huffman, a nephew of the late Dr. Ira E. Huffman, as County Physician. He held the post of County Physician until April, 1945. At that time Tucson did not have the county medical facilities it now enjoys, although some patients were cared for at St. Mary's and Southern Methodist Hospitals. Many of the cases were cared for in the patients' homes. During his time in County work, Dr. Allen delivered hundreds of babies assisted by county-appointed nurses. Only emergency cases were taken to the hospital.

Since returning to private practice in 1945, Dr. Allen delivered 3,360 babies, many of which, until 1954, were home deliveries. Since that time, he insisted that maternity patients go to the hospital. In March, 1948, Dr. Allen delivered 44 babies and seven of that number in one twenty-four hour period. All but three of these deliveries were made at the patient's home.

Dr. Allen delivered the second generation in many families and often he delivered both the parents of the new child. His office often got frantic calls asking if Dr. Allen had retired. After hearing that he was still practicing, the caller would inevitably say, "Oh, I heard he had. I am glad he hasn't because he attended my mother when I was born and I want him to deliver my baby."

In 1948, Dr. Allen was among the first group of doctors in Arizona to receive 50 year plaques from the state medical association. In 1951, Dr. and Mrs. Allen celebrated their Golden Wedding Anniversary.

Dr. Allen was a lifetime member of the First Christian Church. He belongs to the Odd Fellows, K. of P. and Masonic bodies, having finished the higher degrees in Masonry in November with his son F. W. Boyd Allen, University of Arizona Alumni Secretary. He was also a member of the American Medical Association, as well as state and county medical associations.

He had not had much time for hobbies, although he enjoyed collecting old papers and books, especially anything pertaining to his family history.

He was one of the old-school medical men known as the family doctor. Many come to him with burdens other than illness and after talking with him, were strengthened by his counsel. His keen sense of humor heartened many.

Fifty-seven years of practice and over eight thousand babies later, Dr. Allen was still happy in his work, ready to enjoy all the activities going on around him and meet and make friends. When the subject of retirement came up, as it often did, he would say, "What would I do? I just would not be happy. I hope I will be blessed with health so that I can continue with my work for the rest of my years."

He often remarked that he felt that he had been especially blessed. Dr. and Mrs. Allen, also in her 80th year, have two sons and two daughters who have grown up, been educated in Tucson schools and the State University and are all married. The Allen have thirteen lovely grandchildren, all of them Arizonans except daughter Sue's children.

"Dr. Allen was mentioned for the AMA General Practitioner Award during the year 1955."

NEWS ITEM

Mr. J. W. Hedback reported at the April meeting of the Arizona Medical Association that the Ford Foundation is presenting \$10,000,000 to the American Medical Education Foundation. The funds are to be available on a matching basis. The matching plan to function on a sliding scale. For example, if \$5,000.00 has been presented by an organization last year the Ford Foundation will match this with 70% of that total for the first year. Each succeeding year, over a five year period, the Ford Foundation

Woman's Auxiliary

Yuma County Medical Auxiliaries Public Relations Report

OUR main project this year is Audiometer Tests in the City and County Schools. Since there are so few working members we felt we could only do referrals from the teachers. To date we've done approximately 345 with 96 found defective in some manner and referred to their private physicians. We have several outlying schools yet to be done.

Since we formed the Future Nurses Club three years ago in High School the school has become so crowded they have cut their club meetings to once every two months, which makes progress rather slow. We're planning a tea for them in March to entertain their Mothers and hope we can keep their interest up in various manners, including First Aid Classes and helping at the hospital under a big sister plan organized by the Nurses Association. They've been shown two films on nursing and are planning a trip to Phoenix to visit the two training hospitals. This club has 22 members.

Our Civil Defense Chairman is conducting a First Aid Class for anyone that is interested, and we have 6 members that are doing Ground Observing.

The Today's Health is doing a terrific job this year with 97 subscriptions. We've donated 17 to schools 1 each to the Library and Hospital and 2 to Missionaries.

We've collected \$17.50 so far for the Am. Med. Ed. Found. by selling chances on door prizes at our meetings.

Respectfully submitted,

Marian L. Stanley

Yuma County Public Relations Chr.

percentage to be a lesser amount. However, on funds given in excess to gifts given in the past the Ford Foundation will match them dollar for dollar. No matching funds will be presented for gifts that are earmarked for a specific institution, section or area as "The Western Compact States".

Organization PAGE

CIVICS

Norman A. Ross, M. D.

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This is in line with Public opinion as everywhere in our country patients — as a result of free choice of physician — rate their doctors as the leaders in their fields.

On with the old — off with the new — and welcome is the return to professional dignity.

* * *

WESTERN INTERSTATE COMMISSION FOR HIGHER EDUCATION,

Norlin Library, Boulder, Colorado.

WORKING TOGETHER IN THE WEST — WICHE — (annual report, 1955) outlines the development of the several Governor's Mental Health Research Committees. There are some copies of Dr. C. H. Hardin Branch's speech available. New address: The Governor's Arizona Mental Health Research Committee, Capitol Building, Phoenix, Arizona.

* * *

THE SALVATION ARMY, 631 North Seventh Avenue, Phoenix, Arizona.

Those of us who have our roots in the mid-west are some relieved by reports such as the following:

"Telephone call to Salvation Army Western Territorial Headquarters from tornado disaster are (Chicago, Illinois) by Salvation Army Officer, Lt. Colonel Arthur Cass, discloses nearly 100 Salvation Army Officers plus workers and volunteers have set up feeding stations, emergency shelters, communication centers for relaying messages to anxious friends and relatives and are supplying material aid and spiritual comfort to disaster victims. Among others, they

are serving the following towns: Berlin, Wisconsin, Hudsonville, Michigan; Standale, Michigan; Leonard Heights, Michigan; Comstock Park, Michigan; and Drumright, Oklahoma."

* * *

ARIZONA SOCIETY FOR CRIPPLED CHILDREN AND ADULTS, INC., 208 Arizona Title Building, Phoenix, Arizona.

Announcement of the third annual special summer program for physically handicapped children at Prescott from June 1 through July 3 has been made by the Arizona Society for Crippled Children and Adults.

The staff will consist of consultants in orthopedics, neurology and psychology; registered physical and occupational therapists, and a certified speech therapist and a classroom teacher. Treatment measures will be administered by prescription of referring and consultant physicians.

Primary purpose of this Easter Seal service is rehabilitation, with emphasis in three areas:

- A. Concentrated prescribed therapy and treatment
 1. Physical therapy
 2. Occupational therapy
 3. Speech therapy
 4. Social guidance through classroom experience and supervised play
- B. Parent education and training
(Lectures, guest speakers, staff consultation, films, reading materials, etc.)
- C. Modified camping experiences for children
(Cook-outs, picnics, camp-outs, etc.)

* * *

THE EDUCATION WORKSHOP is to be offered again this summer at Arizona State College at Flagstaff in cooperation with the Arizona Society for Crippled Children and Adults.

The graduate credit course, offered during the second summer session at the College, July 16 to August 17, is designed to equip the classroom teacher to meet the needs and the problems of handicapped children. The speech clinic will actually work with children who have speech and hearing difficulties, in addition to providing therapy for the children.

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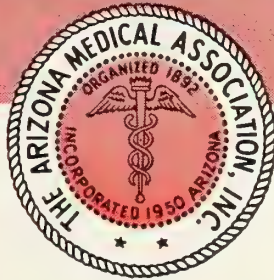
| | | | | | |
|---|-----------|------|---|-----------|-------|
| Dentists (D.D.S.) | | | | | |
| General Dentistry | | | | | |
| Baker, William A. | AL 3-8529 | 1020 | Melton, B. L. | AL 3-8209 | 605 |
| Boynston, C. E. | AL 2-7572 | 817 | McCurdy, Gordon J. | AL 3-8209 | 605 |
| Butt, Byron G. | AL 4-2345 | 517 | Nelson, W. J. | AL 3-5121 | 1011 |
| Chiles, George H. | AL 4-1211 | 618 | Reese, Forrest L. | AL 4-3341 | 1120 |
| Hensing, C. R. | AL 3-6603 | 819 | General Practice | | |
| Johnson, William J. | AL 3-1866 | 919 | Barker, C. J., Jr. | AL 3-2176 | 710 |
| Lee, Joseph A. | AL 4-2345 | 517 | Birker, Robert D. | AL 3-2176 | 710 |
| Leibold, John P. | | | Cohen, Matthew (S.) | AL 3-6797 | 1006 |
| (Child only) | AL 8-3142 | 711 | Dysart, Palmer | AL 4-8483 | 1108 |
| Miller, Eugene H. E. | AL 3-4312 | 702 | Felch, Harry J. | | |
| Pafford, Ernest, Jr. | AL 3-3807 | 718 | (Ob.S.) | AL 3-1151 | 705 |
| Pafford, Ernest M. | AL 3-3807 | 718 | Hussong, R. W. | | |
| Scott, E. M. | AL 8-4277 | 918 | (Ob.G.) | AL 3-2883 | 520 |
| Smith, Frank L. | AL 4-2345 | 517 | Matanovich, M. | | |
| Smith, Franklin R. | AL 4-3257 | 717 | (I.S.U.) | AL 3-6509 | 422 |
| Spillane, L. O. | AL 3-0461 | 821 | McKenna, J. F. (A.) | AL 4-2174 | 910 |
| Steninger, Milo C. | AL 4-3561 | 621 | General Surgery | | |
| Voorhees, Joseph P. | AL 8-3320 | 802 | Bate, Thomas H. | AL 4-3326 | 803 |
| Oral Surgery | | | Brewer, W. Albert | AL 3-4349 | 1116 |
| Bairo, Louis P. | AL 3-9362 | 711 | Greer, Joseph M. | AL 3-2240 | 1111 |
| Borah, Charles E. | AL 3-7414 | 814 | Hansbro, G. L. | AL 3-8559 | 611 |
| Peterson, Ralph G. | AL 2-6313 | 719 | Ovens, J. M. (Tumor) | AL 8-8074 | 608 |
| Stallcup, L. B. | AL 4-3675 | 418 | Ross, Norman A. | | |
| Orthodontists | | | (Diag.) | AL 3-8353 | 810 |
| Jensen, Albert J. | AL 3-2327 | 617 | Shumway, Ord L. | AL 3-4349 | 1116 |
| Moffat, Richard P. | AL 4-1322 | 1017 | Internal Medicine | | |
| Periodontists | | | Deitchman, Morris | | |
| Burke, Wm. G. | AL 8-4644 | 818 | (Ca.) | AL 2-1802 | 1008 |
| Creamer, R. Dean | AL 3-6534 | 820 | Gatterdam, E. A. (A.) | AL 4-2174 | 910 |
| McGuire, Vaughn S. | AL 3-6718 | 1118 | Hamer, J. D. (Ca.) | AL 4-2174 | 910 |
| Physicians & Surgeons (M.D.) | | | Hopkins, Doris F. (A.) | AL 4-7509 | 904 |
| Cardio-Respiratory Diseases | | | Kober, Leslie R. | AL 4-4153 | 1105 |
| Randolph, Howell | AL 4-3146 | 1005 | McKhann, Geo. G. | AL 4-8483 | 1108 |
| Dermatology | | | Milloy, Frank J. | AL 2-0142 | 611 |
| Mackoff, Sam M. (A.) | AL 2-0379 | 920 | Snyder, Bertram L. | | |
| Medigovich, D. V. | AL 3-6617 | 905 | (Chest) | AL 4-2174 | 910 |
| Endocrinology | | | Swasey, Lloyd K. | | |
| Raddin, Joseph B. | AL 2-3577 | 619 | (Chest) | AL 4-2174 | 910 |
| Eye, Ear, Nose & Throat | | | Obstetrics & Gynecology | | |
| Barnet, E. G. | AL 4-3341 | 1120 | Barker, C. J., Sr. | AL 3-2176 | 710 |
| Cruthrds, A. E. | AL 3-5121 | 1011 | DePinto, Angus | AL 3-9112 | 707 |
| Gaskins, Duke R. | AL 3-8582 | 922 | Smith, Gregory C. | AL 3-9112 | 707 |
| Johnson, James L. | AL 4-2841 | 806 | Ophthalmology | | |
| | | | Aiello, John S. | AL 3-8582 | 922 |
| | | | Burgess, Roy E. | AL 3-5604 | 822 |
| | | | Franklin, Henry L. | AL 4-3738 | 805 |
| | | | French, Harry J. | AL 4-1670 | 722 |
| | | | Harbridge, D. F. | AL 3-5604 | 822 |
| | | | Zinn, Sheldon | AL 4-1670 | 722 |
| | | | Pediatric Surgery | | |
| | | | Cloud, Daniel T. | AL 3-2933 | 706 |
| | | | Plastic & Reconstructive Surgery | | |
| | | | Lawrence, Howard C. | AL 8-4101 | 709 |
| | | | Proctology | | |
| | | | Jenkins, James T. | AL 2-2822 | 903 |
| | | | Meyer, Wallace M. | AL 2-2822 | 903 |
| | | | Psychiatry & Neurology | | |
| | | | Barrett, Robert S. | AL 3-1491 | 606 |
| | | | Kowalski, L. J. | AL 4-2850 | 906 |
| | | | McGrath, Wm. Bede. | AL 3-5559 | 811 |
| | | | Radiology & Pathology | | |
| | | | Foster, R. Lee | AL 3-4105 | 507 |
| | | | Kennedy, John W. | AL 3-4105 | 507 |
| | | | Watkins, W. W. | AL 3-4105 | 507 |
| | | | Thoracic Surgery | | |
| | | | Melick, Dermont W. | AL 4-3146 | 1005 |
| | | | Urology | | |
| | | | Faulkner, James W. | AL 8-6884 | 808 |
| | | | Morrison, A. F. | AL 3-7209 | 520 |
| | | | Other | | |
| | | | Arizona | | |
| | | | Arizona Corporation | AL 2-4798 | 506 |
| | | | Laboratory of | | |
| | | | Clinical Medicine | AL 4-9881 | 1106 |
| | | | McLeod Optical | | |
| | | | Company | AL 2-9201 | 522 |
| | | | Nurses' Professional | | |
| | | | Registry | AL 4-4151 | 703 |
| | | | Professional Building | | |
| | | | Office | AL 4-4406 | 500 |
| | | | Professional Garage | AL 4-4833 | Bsmt. |
| | | | Professional X-Ray & | | |
| | | | Clinical Lab. | AL 3-4105 | 507 |
| | | | Seller, Irene H. | | |
| | | | Chiroprapist | AL 4-1801 | 1021 |
| | | | Smith, C. J., CPA | AL 3-9561 | 1022 |
| | | | Turner, F. Bernadette, | | |
| | | | Ph.D., Marriage & | | |
| | | | Family Counselor | AL 3-0362 | 921 |
| | | | Valley National Bank | AL 8-8711 | Lobby |
| | | | Valley National Co. | | |
| | | | (Ins.) | AL 4-2191 | Lobby |
| | | | VNB Car-Park | AL 3-2835 | |
| | | | Wayland's Prescription | | |
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Original ARTICLES

OBSERVATIONS ON ADRENAL CORTICAL THERAPY*

Harry T. Thompson, M. D., F. A. C. P. and
Harold J. Rowe, M. D.

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THIS IS a report of observation on Adrenal Cortical therapy. An attempt has been made to evaluate two of the recently synthesized drugs** — Meticorten (Prednisone), and Meticortelone (Prednisolone), and to compare them to Cortisone and Hydrocortisone.

This study (see Table No. 1) covers 170 patients, 146 with chronic Rheumatoid Arthritis, 8 with chronic Rheumatoid Spondylitis with peripheral joint involvement, 5 with Systemic Lupus Erythematosus, 2 with Periarteritis. Nodosa, 1 with generalized Scleroderma, 1 with Dermatomyositis, 2 with chronic Metabolic Joint Disease (Gouty Arthritis), and 5 with Asthma (2 of these had chronic Rheumatoid Arthritis and Asthma). These patients received (see Table No. 2) one or more of the following Adrenocortical steroids or Corticotrophin: Cortisone, Hydrocortisone, Prednisone (Meticorten), Prednisolone (Meticortelone) and ACTH, either aqueous or one of the long acting gel or zinc preparations.

Observations were recorded as to (1) the relative strength of Hydrocortisone, Prednisone and Prednisolone compared to Cortisone; (2) the optimal maintenance dose of these steroids; (3) the minor and major undesirable reactions; (4) the laboratory and x-ray changes; and (5) the serious complications.

TABLE NO. 1

SUMMARY OF DISEASES IN 170 PATIENTS REVIEWED

| | |
|---|-----|
| Chronic Rheumatoid Arthritis (includes 2 Juvenile Arthritis) | 146 |
| Chronic Rheumatoid Spondylitis (with peripheral involvement) | 8 |
| Systemic Lupus Erythematosus | 5 |
| Periarteritis Nodosa | 2 |
| Scleroderma, generalized | 1 |
| Dermatomyositis | 1 |
| Chronic Metabolic Joint Disease (Gouty Arthritis) | 2 |
| Asthma (2 with Rheumatoid Arthritis) | 5 |

Relative Strengths of Steroids

The relative strength of these steroids, determined by their therapeutic effectiveness in the patients with Rheumatoid Arthritis, appeared to be as follows: Hydrocortisone, two to three times as effective as Cortisone; milligram for milligram; Prednisone and Prednisolone, five to seven times as effective as Cortisone, milligram for milligram.

The dose level of each steroid must be based on its relative strength, since for each steroid there were exhibited certain direct relationships between the size of the dose and its effects. These effects were: (1) the degree of suppression of the disease that might be obtained, i.e., the greater the amount of cortico-steroid given, the greater the amount of the suppression that

*Presented at the Am. Coll. Phy., Arizona Regional Meet., 4 Feb., 1956, Tucson, Ariz.

**Supplied for investigation by Schering Corporation, Bloomfield, N. J.

might be obtained; (2) the duration of the suppression (remission) when the drug was discontinued. Fairly long remissions of Rheumatoid Arthritis were induced by large doses of the steroids and were so reported sometime ago.(1,2) Now it appears that the remissions were in proportion to the dose and duration of administration. (3) the severity of the withdrawal symptoms, i.e., the larger the dose, the more severe the symptoms when the steroid was withdrawn, particularly if it was stopped abruptly, and not by step-like regression, and (4) the number and severity of untoward reactions, i.e., larger doses of the steroids might produce rather readily some major and minor reactions. Their severity appeared to be proportional to the dosage level.

The Average Optimal Maintenance Dose

The optimal maintenance dose should be one which has a moderately suppressive action and a minimal tendency to produce undesirable reactions. These doses appear to us to be as follows: for a 120 pound individual with Rheumatoid Arthritis, Cortisone 40 mgm., Hydrocortisone 20 mgm., Prednisone 7.5 mgm. and Prednisolone 7.5 mgm. These are total doses per day, and may be adjusted for the weight of the patient, and the amount of suppressive action desired.

We have not found the recommended dosage in the folder enclosed with the preparations to be desirable in the treatment of Rheumatoid Arthritis, i.e., giving large doses until total suppression of the disease is obtained, and then reducing the steroid. It does not appear to be therapeutically sound to produce signs of cortinism by large doses, then expect them to disappear as the amounts of steroid are decreased. Our aim has been to plan the optimal maintenance dose, institute patients on combined therapy,(2,4,5) and to reduce the dose if possible.

Minor and Major Undesirable Reactions

Some undesirable reactions, due to the administration of steroids, are listed in Table No. 3. It should be noted that some minor reactions, which are undesirable, occur in almost all patients receiving either adreno-cortical steroids, or corticortophin. Not all of these appear to be of great significance, but should alert one for the appearance of major reactions. Major undesirable reactions may include electrolyte "imbalance." This did not appear to be a problem with Prednisone and Prednisolone in this study. These two steroids were particularly effective

TABLE NO. II
THE NUMBER OF PATIENTS
WHO RECEIVED EACH STEROID

| | |
|--|-----|
| Total Patients on Steroid | 170 |
| Receiving Prednisone (Meticorten) | 83 |
| Receiving Cortisone | 75 |
| Receiving Hydrocortisone | 8 |
| Receiving Prednisolone (Meticortelone) | 4 |

TABLE NO. III
SOME UNDESIRABLE REACTIONS
DUE TO STEROID ADMINISTRATION

| Minor | Major | |
|---------------------|-------------------|------------------------|
| Edema | Muscle weakness | Peptic ulceration, |
| Weight gain | Paresthesias | Perforation and |
| Acne | Psyn. Disturbance | Hemorrhage |
| Hirsutism | Weight loss | Fractures |
| Pigmentation | Thrombosis | "Masking" of infection |
| Moon face | Diabetes | & Gold Toxicity |
| Capillary Fragility | Hypertension | Etc. |
| Hoarseness | | |
| Etc. | | |

in the control of patients with edema. Negative nitrogen balance occurs with nearly all steroid administration, however, in this series it was not deemed necessary to utilize androgenic hormone, since it, too, has some therapeutic disadvantages. Hyperglycemia and glycosuria may occur. Hypercholesteremia, which appeared in some of these patients, is of interest. X-ray examination may reveal evidences of osteoporosis, fractures, peptic ulceration and tuberculosis.

Attention should be called to three of the major reactions (muscle weakness, paresthisas, and hypertension). These are present along with intermittent tetany, polydypsia, polyuria, and biochemical alteration in the blood, i.e., hypokalemia, hypernatremia and alkalosis in hyperaldosteroidism.(6) It is interesting to speculate if Cortisone, Hydrocortisone and ACTH administration may not produce some hyperaldosteroidism to account for these major reactions?

Another major reaction, the masking of infection, and of gold toxicity is well known. This undesirable reaction has therapeutic usefulness in conjunction with antimicrobial therapy in some diseases, i.e., tuberculosis, acute rheumatic fever, typhoid fever, brucellosis, trichinosis, viral hepatitis, mumps orchitis, and hypersensitivity states and with chrysotherapy in rheumatoid arthritis.(2)

The minor undesirable reactions were not analyzed in this study since they have been reported. However, two minor reactions appeared significant. First, increased gastric acidity and its symptoms were of frequent occurrence

with all these steroids. Peptic ulceration with bleeding or perforation may suddenly occur. Two such cases appeared in this series. It was also frequently necessary to employ anti-acids and dietary management in these patients presenting symptoms of hyperacidity. On the other hand, four patients with peptic ulcer (prior to steroid therapy) were successfully maintained on ulcer management, and Prednisone (Meticorten). In three of these patients, the ulcer disappeared and in one it was unchanged. The grave danger of steroid administration to patients with peptic ulceration must be considered before these drugs are given. Second, increased capillary fragility often was present in those patients who received Prednisone (Meticorten) usually manifested as purpuric spots in the skin of the lower arm, hands, and legs. This seemed to be a property of this steroid since no other cause could be demonstrated. Vitamin P and C* given orally had some preventive action against this phenomenon. Therefore, both increased gastric acidity and increased capillary fragility, may lead to major reactions. Examples of these are included under major reactions.

Major Reactions — Spontaneous Thrombosis

Spontaneous thrombosis occurred in 4 patients in this study as follows: One, a patient with chronic Rheumatoid Arthritis had a subendocardial thrombosis which appeared while he was on Meticorten. This patient made an uneventful recovery, and was continued on Meticorten. Two patients, one with Periarteritis Nodosa and one with chronic Rheumatoid Arthritis, had bilateral deep vein thrombosis of the calf (one received ACTH, the other Hydrocortisone). The fourth patient with chronic Rheumatoid Arthritis experienced a deep vein thrombosis of the calf three weeks postoperatively while on Meticorten. She had received fairly large doses of parental Cortisone preoperatively and postoperatively.

Major Reactions — Complications Requiring Immediate Surgery

Major complications requiring immediate operation appeared in three patients, two with peptic ulceration and perforation, and one with hemorrhage of the gastric omentum. One of these patients, a Rheumatoid Arthritic on cortisone, had a duodenal perforation with bleeding into the head of the pancreas. She was operated and recovered. The second patient had received

prior ACTH the week before and a gastric ulceration and perforation occurred while on Meticorten. She died 78 hours postoperatively of a generalized peritonitis. Another patient, the third one in this group, exhibited signs and symptoms of a perforated viscus. At operation, a hemorrhagic gastric omentum was found adhered to the anterior abdominal wall, and abdomen full of fluid which was subsequently sterile on culture without evidence of a viscus penetration or perforation. Later it was learned that this patient had fallen striking her abdomen on the edge of a table approximately 3 days before operation; and since increased capillary fragility had been noted in patients on Prednisone, which she was taking, it was thought that possibly this was a traumatically induced hemorrhage due to increased capillary fragility of the vessels of the gastric omentum. She made an uneventful recovery and has been maintained on Meticorten.

Major Reactions — Diabetes Mellitus and Hypertension

One patient with Rheumatoid Arthritis developed hyperglycemia and glycosuria following the administration of Meticorten. This patient was successfully maintained on insulin and Meticortelone. Diabetes Mellitus was present prior to steroid therapy in one other patient with Rheumatoid Arthritis. In this patient the diabetes was increased by Meticorten but maintained without insulin on Cortisone.

Hypertension, not present prior to steroid therapy, appeared to five patients with Rheumatoid Arthritis. In two of these the tension was increased with Meticorten, but was normal with Cortisone and Hydrocortisone, while 3 patients exhibited an increased tension with ACTH, Cortisone and Hydrocortisone, but were normal with Meticorten.

Major Complications — Fractures

Fractures were observed in seven patients; 5 of these had Rheumatoid Arthritis and 2 had Systemic Lupus Erythematosus. The distribution of the fractures were as follows: Multiple spinal fractures, compression type — 3 patients; single fractures of spine — 2 patients; fracture of femur — 1 patient; and fracture of humerus — 1 patient. The latter two occurred with minor trauma. Only one patient of this group received Meticorten. The others received ACTH or Cortisone.

*Hesperidin-c. (Hesper-c, National Drug Co., Phil., Penn.)

Major Complications — Death

In only one of the eight patients who died did the steroid appear indirectly responsible for the death. This patient died 78 hours post-operatively with a generalized peritonitis following a rupture of a gastric ulcer. Two patients died of their disease — Systemic Lupus Erythematosus; 2 patients as a result of Arteriosclerotic Heart Disease, Bronchiectasis, and Pneumonia; and two died elsewhere, their causes are unknown. One died following a cerebral hemorrhage secondary to a thrombocytopenic purpura.

Summary of Major Reactions

The major reactions that occurred among the 170 patients due to the steroid, are summarized in Table No. 4. They were as follows: fractures, 7 patients; hypertension, 5 patients; spontaneous thrombosis, 4 patients; peptic ulceration, and perforation, 2 patients; hemorrhage of the gastric omentum, 1 patient, and death due (indirectly) to steroid, 1 patient.

TABLE NO. IV

SUMMARY OF MAJOR COMPLICATIONS OBSERVED IN 170 PATIENTS FOLLOWING STEROID ADMINISTRATION

| | |
|-------------------------------------|------------|
| Fractures | 7 patients |
| Hypertension | 5 patients |
| Spontaneous thrombosis | 4 patients |
| Peptic ulcer with perforation | 2 patients |
| Existing diabetes worsened | 2 patients |
| Hemorrhage, gastric omentum | 1 patient |
| Deaths due to drug | 1 patient |

Conclusions

In this study an attempt has been made to evaluate Cortisone, Hydrocortisone, Prednisone and Prednisolone with reference to (1) their relative strength, (2) the optimal main-

tenance dose, and (3) the production of undesirable major reactions in a group of 170 patients. No attempt has been made to record or discuss the therapeutic effect of these drugs in those diseases studied, since they have been previously reported.(1,2,3,4,5) It seems however, that the following remarks are warranted:

(1) The relative strength of these corticosteroids as compared to Cortisone are for Hydrocortisone, Prednisone and Prednisolone two to three, five to seven, and five to seven respectively, times greater than Cortisone, milligram for milligram.

(2) The optimal daily maintenance dose for an individual weighing 120 pounds with Rheumatoid Arthritis is for Cortisone 40 mgms., for Hydrocortisone 20 mgms., and for Prednisone and Prednisolone 7.5 mgms., and 7.5 mgms.

(3) Major undesirable reactions may result from the employment of these corticosteroids. This property is shared by both Prednisone and Prednisolone.

(4) Prednisone and Prednisolone appear to possess the desirable suppressive qualities of both Cortisone and Hydrocortisone, and since neither prednisone nor Prednisolone appear to disturb the electrolyte balance, both of these steroids seem preferable to Cortisone and Hydrocortisone.

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AN UNUSUAL CAUSE OF INTESTINAL OBSTRUCTION

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Donald A. Polson, M. D., Phoenix, Arizona

INTESTINAL obstruction is a fairly common problem to the surgeon but in this instance the cause of the intestinal obstruction, particularly the mechanism by which it was produced, warrants reporting.

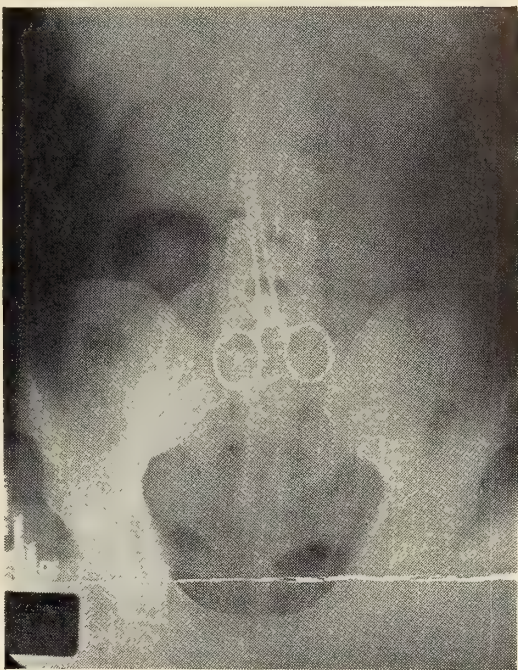
CASE REPORT: M. M., age 27, white male, was admitted to Good Samaritan Hospital, Phoenix, on 11 April, 1954.

He complained of sudden onset of generalized abdominal pain and vomiting beginning about four hours before admission. Some relief had been obtained by morphine. His past history included a gastrectomy for a duodenal ulcer done in a hospital in another state, approximately three weeks before the onset of the present illness. He stated that his postoperative course had been uneventful, that he had been able to eat fairly well and was regaining his strength rapidly, and had had no abdominal pain until the sudden onset as described above.

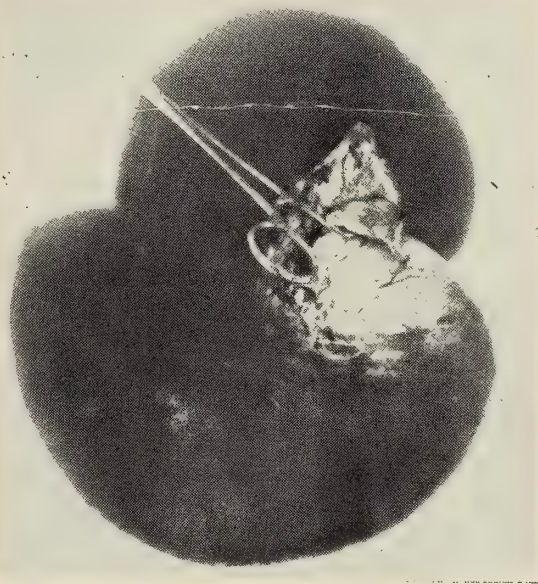
Examination at that time, showed a well developed, well nourished, young white male in mild shock, lying on his left side with knees and thighs flexed. Any change in this position, increased the intensity of the pain. The abdomen was firm, very slightly distended, silent, and moderately tender, especially in the mid-abdomen.

Urinalysis was negative, blood showed a slight leukocytosis. Flat plate of the abdomen showed a foreign body dessembling a large Babcock forceps lying in the mid-abdomen, its point in the epigastrium, its handle at the brim of the false pelvis, and a single distended loop of small intestine.

Laparotomy, done approximately twelve or fourteen hours after onset of the acute pain, showed a moderate amount of sero-sanguinous fluid free in the abdomen, a number of adhesions particularly about the upper abdomen, and a long Babcock forceps with its point apparently attached to a portion of the gastro-hepatic ligament, its handle pointing down into the mid-abdomen. Herniated through one handle of the forceps, was an eighteen inch long loop of small intestine, which was grossly distended with fluid and air, and, together with its mesentery which also had been pulled through



1. Preoperative x-ray of abdomen.



2. Resected gangrenous intestine — fixed. Note both ends of the intestine protruding from single loop of handle of forceps.

the handle, was completely gangrenous. There was moderate distension of the small intestine proximal to this point of obstruction.

The forceps was gently loosened allowing its point to be disengaged from the gastro-hepatic ligament. The afferent and efferent

limbs of the strangulated intestine were then divided between clamps, the mesentery divided and ligated and the Babcock forceps together with its captive strangulated intestine removed intact. An aseptic oblique end to end anastomosis was done, the defect in the mesentery closed, and the abdomen closed without drainage.

The patient was much more comfortable two hours after the operation than he had been before. He enjoyed a smooth postoperative course exhibiting peristalsis and passing flatus at forty eight hours, at which time his gastric suction was discontinued. He was ambulated about twenty-four hours postoperatively, and was discharged with a well healed wound on about the eighth postoperative day.

He has enjoyed good health since, apparently, as his local lawyer stated shortly after an out-of-court settlement had been made, that it had been a perfect medical-legal case from a plaintiff's lawyer's viewpoint, except, unfortunately, the plaintiff had suffered no permanent disability.

SUMMARY: A case of a strangulated, intestinal obstruction due to herniation of small intestine through the handle of a Babcock forceps left in the abdomen three weeks previously during the course of a subtotal gastrectomy has been reported. The loop of small intestine which was strangulated through the handle was gangrenous necessitating resection and anastomosis.

COMPLEX DYSLALIA

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COMPLEX dyslalia, a severe articulatory failure, is the most common major speech disorder. It has accounted for 39.5 percent of the speech defectives seen in the writer's office over the last fifteen years. In the published nomenclature of speech pathology this disorder is designated as infantile perseveration, articulatory failure, delayed speech and other similar terms. Many years ago, however, I chose the term complex dyslalia as a reference to this type of speech disorder because it is characterized by a complexity of substitutions, omissions, additions and distortions of the sounds of speech.

Individuals who evidence this type of failure have a normal quantity of speech but its quality ranges from bare intelligibility to complete unintelligibility. Such language is in effect a foreign one since the articulatory errors are so consistent that it can be learned and usually is understood quite readily by the mother and by siblings near the same age of the defective and who therefore are closely associated with him in play activities. The father and older siblings who see less of him usually do not understand him. In one such case, that of a five year old female, twenty-five of the sounds of speech were involved. These included all of the four semi-vowels and all twenty-one of the consonants used in American speech. According to the Travis scale of values assigned to these sounds, this child's speech was 77.6 percent defective and all speech efforts were totally unintelligible to me.

At another age extreme is the case of a twenty-year old female who had sixteen defective sounds, resulting in 42 percent defective speech and bare intelligibility.

Similar articulatory symptoms are to be found in other speech disorders such as speech of the hard of hearing, the paralytic, the cleft palate, the mentally retarded and others of easily discernible organic etiology. The complex dyslalic, however, differs from all these in one outstanding respect: physical and mental examinations reveal no apparent cause for the speech failure. Most victims of this disorder are normal and many are superior in all physical and mental activities other than that of speech.

The fact that examinations are negative in these cases lead many in the field to label them as purely functional. Others argue that the development of speech has come to be a normal process, and that if one experiences such a drastic failure in the process there is at least a possibility that the failure is due to physical deviations; deviations which are so located or so mild that medical science has thus far been unable to discover them but which nevertheless may exist. The failure of agreement as to cause of complex dyslalia exists despite the fact that, as in the case of stuttering, there has been much research and speculation concerning it. Some of the theories as to cause of the disorder follow.

1. Psychoneuroses, resulting in mental confusion which renders the child unable or unlikely to perform the visual, the auditory or the mental concentration necessary for normal speech development.

2. Physical and mental shock which temporarily halt development of speech. When it is later resumed the child has passed certain developmental stages without which normal speech is impossible.

3. Lack of encouragement during early speech efforts. The young child's environment must give favorable responses to these efforts since such responses are the rewards which spur him on to ultimate speech normalcy.

4. Retarded maturation of neuromuscular coordination, which perpetuates infantile speech characteristics beyond the point at which continued improvement is possible.

5. Bilingualism, with resultant speech confusion in those children whose speech sensitivity is insufficient to cope with more than one language at the same time.

6. Short auditory memory span. Auditory memory span is the number of speech sounds one can recall, in order, after they have been presented to him at one second intervals. In the absence of a normal span he is incapable of recalling sufficient numbers or sequences of sounds for normal progress in word building and acquisition. Normal development of the span is said to be a function of the auditory association area of the dominant hemisphere, and a mild dysfunction of this area is thought to result in a short auditory memory span. It is thought, further, that the resultant speech sound confusion constitutes complex dyslalia. As in the case of auditory aphasia, caused by more severe lesions of this area, there is no loss in hearing but there is a loss in the associative function which enables the individual to store imagery of, and accurately direct motor areas in the oral production of the speech he hears. Dysfunction of the area may be due to damage, developmental failure or heredity, the latter being suspected since short auditory memory spans and complex dyslalia often "run" in families.

In an effort to arrive at a statistical figure, I made an attempt to derive from my files the incidence of possible cortical damage or developmental failure in all cases of complex dyslalia. The task proved too great for the time

at my disposal, however, and had to be abandoned. Suffice it to say that while there were occasional exceptions, a great majority of the histories studied revealed one or more of the following: breech, difficult and immature births; Caesarean section, congenital anemia, kernicterus, convulsions and/or cyanosis at or shortly after birth; toxemia of pregnancy, severe anemia and other serious illnesses in the mother during pregnancy. The histories also revealed early incidence (three years or under) of accidents involving severe head injuries, early whooping cough and other early diseases accompanied by high temperature. In the seventeen cases of complex dyslalia presently being treated at my office, fourteen evidenced one or more of the preceding factors, two evidenced positive family speech history and one was negative so far as possible etiological factors could be determined. One hundred percent of these seventeen have substandard auditory memory spans in terms of norms established by another writer.

It is admissible that the factors here presented may be coincidental and of no significance in complex dyslalia without a control group of normal speaking individuals. The persistency of these factors, however, may lend foundation to their significance. Examination of hundreds of such cases and observations of their utter failure in direction and control of "speech" musculature, which most children accomplish so easily, cause me to suspect that the failure lies on a directional or cortical level. It is agreed that other theories as to cause listed here may operate in some speech failures, but their significance in such a severe failure as complex dyslalia appears questionable. Less than two hours before the present moment of writing I saw a six year old negro male for speech examination. He was brought in from Vicksburg, a small town one hundred and twenty miles from Phoenix, by his white school teacher. The teacher was rather sketchy on medical, developmental and family history, but information which may be of some significance in this case is as follows: (1) there are four other children, all of whom have normal speech; (2) this child did not walk until three years but has an exceptional physique and now exhibits normal muscular coordination in all activities other than speech; (3) he is mentally normal; (4) his hearing is normal; (5) he has developed a few intelligible words in

only the last year; (6) his mother is said to have used excessive sleeping tablets while carrying this child; (7) he was "dropped" at six months of age; (8) he has complex dyslalia of a severity which renders his speech totally unintelligible. This child is a major school disciplinary problem, but small wonder since he cannot make anyone understand him and all his fellow pupils think he is mentally defective. How does this child differ from the other four siblings? Does the difference lie in possible head injury sustained when he fell from his mother's arms to the floor and/or in the mother's over dosages of sedatives during pregnancy? These were the only distinguishing factors I was able to determine from the information available.

The type of therapy employed in my practice with these cases thus far has resulted in normal speech in those who have continued for the prescribed length of time. Range of time required has extended from six to twenty-four months, though the usual period is twelve to eighteen months, with individual therapy. At best the procedure is a long and difficult one, and those who propose to secure appreciable relief from this or any other major speech disorder in short term speech clinics, and especially with the group therapy usually employed, do so out of ignorance of the magnitude of the problem, or, being aware of the magnitude, out of professional dishonesty. I have long been disturbed about such programs and believe their only justification lies in their being held in college or university clinics in order that students of speech pathology may observe a variety of disorders and the methods of treating them. Any benefit to the speech defective "guinea pig" is purely incidental and accidental. Leading parents of these children to hope for appreciable improvement in such programs either lulls them into a sense of false security in the belief that all is being done for the child that can be done, or creates a distrust in the ability of the profession as a whole. My statements concerning this matter are based upon observation of many children who evidenced the futility of such programs and upon my knowledge of the magnitude of correcting defective speech.

Demonstration of the magnitude of the problem is not difficult. Let us assume the case of a six year old complex dyslalic. Let us assume that his speech failure involves the "s, z, r, l, k, g" and the two "th" sounds. According to the

Travis scale, the value of these eight sounds in running speech presents a defective speech picture of 41.5 percent. Assuming that he has a normal quantity of speech, as such cases usually do, his vocabulary as a six year old will number approximately 2562 words. And in terms of our defective speech percentage of 41.5 his vocabulary will contain approximately 1064 defective words, presenting in itself a picture which only the foolish would promise to change appreciably in a few weeks' time. The number of defective words would be somewhat less than 1064 since a given defective sound often occurs more than once in a single word. However, even an allowance for such, which is impossible to calculate, would not reduce the figure sufficiently to alter its function in this discussion. Magnitude of the problem is further demonstrated by noting the steps required in correcting a defect of speech. Assuming that involved organic disorders have been treated or removed, the steps are as follows: (1) secure correct production of all defective sounds as isolated units; which may require months in cases of cleft palate, anacusis, hypacusis, paralysis, etc.; (2) secure the sounds in nonsense syllables; (3) secure them in simple words; (4) in longer words; (5) in short, simple phrases; (6) in short sentences; (7) in long sentences; and finally, (8) in running speech. And the speech of our fictitious six year old has been corrected only when he consistently uses, in running speech, all eight of the previously defective sounds normally in all 1064 of the previously defective words. Correction of such a case would require approximately six to eight months.

Normal production of speech requires highly coordinated reflexive activity of the organs and systems used therein. The production of a word containing five sounds requires five series of such activity. Correction of defective speech involves not only development of new reflexive patterns, but it also involves literally tearing out by the roots all old patterns of defective speech production. The problem in major speech disorders is as difficult and prolonged as if one attempted to help a child completely forget one language and insert in its place another. A recent report on the cleft palate speech clinic at Northwestern University included the statement that many of their cases require several years for correction and often cost as much as \$5,000 per case. In a six year old child, a simple

lisp involving the "s and z" sounds constitutes 13.2 percent defective speech and results in defective production of approximately 338 words. Correction of these two sounds, probably the most exasperating ones the speech therapist encounters, requires approximately four months. A seven year old's failure to develop an "r" sound resulted in 9.3 percent defective speech and defective production of approximately 300 words. Despite a high degree of intelligence, interest and cooperation in the procedure, this child required three and one-half months for correction. There is no short, easy method of correcting even so-called "minor" defects of speech and parents should not be disillusioned into believing there is.

Since increasingly smaller numbers of complex dyslalia are seen in those beyond twelve years of age, many individuals apparently "out-grow" the disorder. However, varying numbers of defective sounds have been observed in adults ranging up to sixty years, and in many cases it definitely was known that the sounds were carried over from early complex dyslalia and in other cases this apparently was true. Early treatment of such cases, then, appears to be the wise procedure. Not only will this insure complete recovery from the disorder but it will safeguard against psychological trauma which

may be suffered if it is allowed to persist throughout childhood. On numbers of occasions two and three siblings have required correction of complex dyslalia, and often it has appeared that a younger child's difficulty was based purely upon imitation of an older one; which indicates the wisdom of correcting an older child's speech not only for his own sake but for the sake of a younger one as well.

Most cases of complex dyslalia have a history of delayed speech. A diagnosis of the latter indicates that while the child has not yet developed speech, his present failure is a temporary one and speech eventually will develop even though he has no assistance. However, many cases of delayed speech fail in normal articulation and thereby develop into complex dyslalia. These two disorders are thought to have a common cause, the distinction being that the etiological factors are of a more severe nature in delayed speech. Not only does it seem wise to seek early treatment of complex dyslalia, but the parent of a child three years and upward who has not developed speech should be on the alert for complex dyslalia. Seeking an evaluation of her child's speech when she suspects that it is not developing normally may prevent its becoming fixated into a major problem.

SYNERGISM BETWEEN MEPERIDINE (DEMEROL®) AND SCORPION VENOM

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MMORPHINE, for some years, has been recognized as an undesirable therapeutic agent for use with scorpion venenation (Kent & Stahnke, 1939). Physicians who have had considerable experience with scorpionism have remarked about the increase in convulsive activity following the administration of morphine and have expressed the opinion that death which followed in some of these cases should not be attributed to the scorpion venom alone but rather to the combined action of these agents. When similar atypical reactions were reported following the use of meperidine, we made a pilot test of this

combination, the results of which suggested a synergistic effect between Demerol® and the venom of the scorpion, *Centruroides sculpturatus* Ewing (Stahnke, 1954).

Since its discovery by Eisleb and Schaumann (1939), the use of meperidine as an analgesic agent in medical practice has increased greatly. Since scorpion venenation is frequently accompanied by intense pain, Demerol® is often one of the first therapeutic agents considered. Among more than 150 clinical reports on scorpion venenation, submitted to this laboratory by the medical profession, we noticed an increase in the atypical reactions associated with the use of Demerol®. With this condition existing, it was

1. Grateful acknowledgement is made of the technical assistance of D. Doro, laboratory technician and A. E. Dammann, Asst. Director, F.A.R.L.

felt that a more complete study of this apparent phenomenon would be worthwhile.

PROCEDURE: The statistical design of this investigation followed the method of Thompson and Weil (Thompson, 1947; Thompson & Weil, 1952; Weil, 1952; Weil et al, 1953). Rats were again the laboratory animals of choice because of the close parallel between their reactions to the venom with those of man. (Stahnke, 1938, 1941, 1950). The LD₅₀ was determined for lot 97.1 of *C. sculpturatus* venom, a lyophilized preparation which had been taken from living scorpions by electrical stimulation(2). The venom was reconstituted with distilled water to a concentration of 5 mgm/ml. The LD₅₀ was also determined for an aqueous solution of Demerol®(3) with a concentration of 50 mgm/ml. The test for synergy between Demerol® and the venom was sought through two approaches: First, by keeping the quantity of meperidine constant while the dosage level of venom was varied. In the second approach, the venom was kept constant while the dosage levels of meperidine varied. As a result of our previous experience, we chose the Demerol® constants at 50 mgm/kgm and 100 mgm/kgm respectively. The venom constant was chosen at 0.5 mgm/kgm, or approximately one-half rat-LD₅₀. All injections were made subcutaneously in the groin. Since the LD₅₀ of meperidine for the rat varies from 200 mgm/kgm body weight when given subcutaneously, to 34 mgm/kgm via the intravenous route (Barlow and Lewis, 1951)(4), great care was exercised to be sure that the latter route was not being used inadvertently. In order to prevent the possibility of a direct reaction between chemical agents, injections were given for each in opposite groins, with a short interval between injections.

RESULTS: The data from all tests are given in the table below. The Da (first level dosage) is in mgm/kgm, as are also the LD₅₀'s and the Confidence Limits. Demerol®-constant I is 50 mgm/kgm and Demerol®-constant II is 100 mgm/kgm. The venom constant is 0.5 mgm/kgm. In each case n=4, K=3, and R=1.26, except for the Demerol® with venom-constant, in which R=2.

| Agents | Da | r-values | LD-50 | 95% Confidence Limits |
|-----------------------------------|-------|----------|-------|-----------------------|
| Venom only | 0.57 | 0,0,1,4 | 0.96 | 0.85 to 1.09 |
| Demerol(R) only | 160.0 | 0,0,3,4 | 239.8 | 213.6 to 269.1 |
| Venom plus Demerol(R)-constant I | 0.45 | 0,0,3,3 | 0.714 | 0.575 to 0.888 |
| Venom plus Demerol(R)-constant II | 0.29 | 0,1,4,4 | 0.387 | 0.345 to 0.435 |
| Demerol(R) plus Venom-constant | 20.0 | 0,1,2,4 | 67.27 | 39.62 to 114.2 |

DISCUSSION: The above data indicate that whereas the median lethal dose of *C. sculpturatus* venom alone is 0.96 mgm/kgm. in the rat, when 50 mgm/kgm of meperidine is administered, the median lethal dose of the venom drops to 0.714 mgm/kgm; when 100 mgm/kgm, of meperidine are administered, the median lethal dose drops to 0.387 mgm/kgm. Conversely, we see that whereas the median lethal dose of meperidine alone is 239.8 mgm/kgm, yet in the presence of one-half median lethal dose, a quantity which is well out of range of the venom confidence limits, the median lethal dose of the meperidine drops to 67.27 mgm/kgm. That there is very little, if any probability, for these results due to chance is obvious from the 95% confidence intervals obtained.

These data take on medical significance when one considers the extreme sensitivity of the human organism to *C. sculpturatus* venom. Under electrical stimulation the average scorpion yield of venom is approximately 0.15 mgm. This result is obtained from many thousands of scorpions. Tests have also indicated that under natural-sting conditions the scorpion does not give up this much venom. Yet, according to our State vital statistics, a 16-year old white male child of good health succumbed to the sting of one scorpion. Let us consider a hypothetical case. In order to stay on the conservative side, let us assume that a scorpion, in an incident that terminated in a fatality, injected as much as 0.20 mgm into a child of 20 kgm (44 lbs.). This would give an LD of only 0.01 mgm/kgm. In the case of the rat, the LD₅₀ is 0.96 mgm/kgm. but with 50 mgm/kgm. of meperidine this drops to 0.714 mgm/kgm. and with 100 mgm/kgm. the venom LD₅₀ becomes 0.387 mgm/kgm. or approximately one-third the normal. In other words, the ratio of lethal activity between meperidine to venom, in the rat, is 0.714:50 and 0.387:100. If we considered the species specificity of the human organism, the LD for the venom changes from 0.01

2. This technique gives a venom uncontaminated by other body tissues, a condition not realized by the common procedure of grinding dried telsons followed by either aqueous or glycerine extraction.

3. Demerol(R) hydrochloride received through the courtesy of Winthrop-Sterns, Inc.

4. LD-50 200 mgm/kgm (95% Conf. Limit 167-240). LD-50 34 mgm/kgm (C.L. 28-41).

mgm/kgm. to 0.0074 mgm/kgm. and 0.004 mgm/kgm. Applying the lethal ratios the effective dosage of meperidine would be 0.52 mgm/kgm. and 1.03 mgm/kgm. For a 20 kgm. (44 lb.) child, this would amount to 10.4 mgm. to 20.6 mgm. of Demerol® — a dosage that could prove fatal but not act in an analgetic capacity. "As a rule clinically, 25 mg. of Demerol® would exert a minimal analgetic response." (Winthrop 1956). If we consider the results obtained when the venom was constant we have a lethal ratio of 0.5:67.27. The human venom LD becomes 0.0052 mgm/kgm. Applying the lethal ratio, the effective dosage of meperidine would be 0.70 mgm/kgm. For our hypothetical 20 kgm. individual, this would make a 14.0 mgm. dosage.

Let us not lose sight of the fact that the above is a hypothetical situation. The problem of species specificity can only be finally solved with the use of the species in question in bio-assay. At the same time, we should, likewise, not lose sight of the clinical evidence in favor of the results obtained. In evaluating clinical material, one word of caution is in order, i.e. two non-lethal scorpions are frequently mistaken for *C. sculpturatus* by both layman and physician. One such case investigated was reported by the author (Stahnke, 1950).

Although Nalline® (Nalorphine hydrochloride) has been reported to be a specific antidote for Demerol® (Radoff & Huggins 1951; Eckenhoff, Elder & King 1952), initial tests do not indicate this property in the presence of *C. sculpturatus* venom; in fact it too seems to act synergistically.

CONCLUSION: The evidence presented here seems to be positive enough to place Demerol® in the risk class of analgetic agents when used in conjunction with *C. sculpturatus* scorpion

venenation. If a patient were suffering from a bite or sting, and the offending animal had not been identified, Demerol® would be contraindicated. Since *C. sculpturatus* venom is a neurotoxin and one of the lethal factors in Gila Monster (*Heloderma suspectum* Cope) and rattlesnake (*Crotalus*) venom is neurotoxin, neither meperidine or morphine would be desirable analgesic agents, especially during the first 24-hours of venenation. When treating any type of envenomization, it is well to keep in mind that venoms in general are complex organic compounds, the exact composition of which is unknown in most cases. Therefore, the pharmaceutical principal of chemical compatibility should be constantly kept in mind.

SUMMARY: Data have been presented to show definite synergistic activity between *C. sculpturatus* scorpion venom and meperidine in rats. The possible application of these findings to human cases of scorpion venenation was also indicated together with a word of caution regarding the use of either morphine or Demerol® in any case of neurotoxic envenomization. The importance of the principle of chemical compatibility in the treating of venenation was mentioned.

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PHOENIX *Clinical* CLUB

The Case History in this discussion is selected from the Case Records of the Massachusetts General Hospital, and reprinted from the *New England Journal of Medicine*. The discussant under Differential Diagnosis is a member of the staff of the Massachusetts General Hospital. The other discussants are members of the Phoenix Clinical Club.

MASSACHUSETTS GENERAL HOSPITAL PRESENTATION OF CASE 39352

A FORTY-FOUR-YEAR-OLD woman was admitted to the hospital because of a mass in the left clavicle.

About six months before admission the patient began to notice pain, stiffness and limitation of abduction in the left shoulder that were thought to be "rheumatic." The removal of several teeth was followed by considerable improvement in the shoulder, but some stiffness still remained. Stiffness had gradually become worse with recurrence of pain and limitation of abduction and elevation. For about four months she had been aware of a lump at the medial end of the left clavicle that had gradually increased in size. On occasions it was tender.

The past history and review of the systems were otherwise noncontributory.

Physical examination showed a well developed and well nourished woman. The examination was not remarkable except for a hard, fusiform, lemonsized, nontender mass involving the medial end of the left clavicle.

The temperature, pulse, respirations and blood pressure were normal.

The urine was normal. It did not contain Bence-Jones protein. Examination of the blood showed a hemoglobin of 13.6 gm. and a white-cell count of 9100 with 75 per cent neutrophils, 13 per cent lymphocytes, 9 per cent monocytes and 3 per cent eosinophils. The serum total protein was 6.2 gm., the calcium 10.9 gm. the phosphorus 3.1 mg., and the alkaline phosphates 3.8 units per 100 cc. A roentgenogram of the chest was normal. Examination of the bones revealed almost complete destruction of the sternal end of the left clavicle, the bone in this region being moth eaten and slightly en-

larged. There was also a periosteal reaction. The right side of the fifth cervical vertebra showed similar, less marked changes. The body of the vertebra was not deformed, and there was no soft-tissue thickening. The skull, pelvis, other long bones and the remainder of the spine showed normal kidney outlines.

On the second hospital day an operation was performed.

Dr. Joseph Bank

The diagnosis and treatment of malignant bone tumors is bewildering even to the experts. The multiple classifications of bone neoplasm add to the confusion. Accurate classification is impossible on clinical grounds. Primary malignant bone tumors are rare and few pathologists can qualify as experts in this field.

History and physical examination are important but seldom offer more than a clue. X-rays are, of course, indispensable, but they too do not afford an accurate diagnosis. The x-ray opinion of the most experienced radiologist must be supported by biopsy.

Laboratory studies should be utilized but are seldom of diagnostic value. Elevation of the acid phosphatase determination indicates metastatic carcinoma of the prostate. Alkaline phosphates determinations are non-specific since elevation is merely an index of bone production. In multiple myeloma the total proteins are elevated, particularly the globulin fraction resulting in a reversal of the albumin globulin ratio. Bence Jones proteins are occasionally found in the urine, but this is of little value. The white cell count may be of value when an early bone infection shows x-ray characteristics suggesting a bone tumor. But early bone infection also suggests an early Swings' tumor which is associated with leukocytosis and low grade fever.

An adequate biopsy should be performed as a major operation and the excised specimen should include periosteum, a portion of the osseous tumor mass, bone and marrow. Frozen section studies have only a limited value in the problem of bone neoplasm. The delay in definitive treatment following biopsy is fully justified because of the increased accuracy of diagnosis and avoidance of unnecessary radical surgery.

Furthermore, the pathologist must have the benefit of the history, laboratory findings and x-ray, as well as the pathological specimens.

A simple, practical classification may be as follows:

1. From cartilage — chondrosarcoma
2. Derived from bone — osteosarcoma
3. Derived from connective tissue
 - a. Fibrosarcoma
 - b. Malignant giant cell tumor
4. From menchymal connective tissue or possibly reticuloendothelial system: Ewing's sarcoma
5. Derived from hematopoietic tissue:
 - a. Multiple myeloma
 - b. Reticulum cell sarcoma
 - c. The leukemias
 - d. Hodgkin's disease

Chondrosarcoma is usually encountered in young adult life, but may also occur in adolescence. When occurring in later years, they develop secondarily to preexisting benign cartilaginous tumors, such as endochondroma or osteochondroma. The bones most commonly involved are the long bones at their extremities, the innominate bones and the ribs. Roentgenologically the central chondrosarcoma may be characterized by irregular mottling and spotty partial calcification in a radiolucent cavity and in which there is some cortical expansion and beginning erosion of the overlying cortex.

Osteosarcoma usually develops in the adolescent or young adult between the ages of ten and twenty-five. In older persons it occasionally develops in preexisting bone disease such as Paget's disease. It usually develops in the ends of long bones in the metaphyseal region. It is commonest in the lower end of the femur, the upper end of the tibia, and the upper end of the humerus. Roentgenologically these tumors may be osteolytic or osteoblastic. In the typical well developed tumor there is usually evidence of bone destruction with distinct periosteal tumor mass. The so-called "sun-ray" appearance resulting from perpendicular striations of periosteal new bone has been erroneously considered pathognomonic of osteosarcoma. It may be found elsewhere as in metastatic carcinoma and Ewing's sarcoma.

Fibrosarcoma may occur at any age, but most commonly in early adult life. It may occur in any bone and may be periosteal or endosteal in origin. It is more frequently primary in the

medullary cavity. Roentgenologically the central fibrosarcoma is characterized by a cyst-like area with indefinite margins that eventually show erosions and destruction of the overlying cortex. The periosteal type is characterized by a soft tissue shadow overlying the cortex with erosion and destruction of the adjacent bone.

Malignant Giant Cell Tumor is usually encountered in adults and exists in a benign as well as malignant form. The malignant giant cell tumor is rare and may develop in a tumor previously considered benign. The common sites are the lower end of the femur, the upper end of the tibia and lower end of the radius. The Roentgen appearance is that of a multilocular cystic area located in the end of the long bone. It used to be considered pathognomonic, but is not necessarily so.

Ewing's Sarcoma has an age incidence of ten to twenty-five, and it usually occurs in childhood. Usually it occurs in the shaft of long bones but may occur elsewhere. There is no characteristic x-ray appearance. The so-called "onion peel" appearance that results from superimposed layers of periosteal new bone is no longer considered diagnostic.

Multiple Myeloma represents a tumor of adult life between the ages of forty to sixty. The skeletal lesions are widespread and every bone in the body may become involved. In the classical case, x-ray reveals multiple osteolytic lesions in the long bones and ribs which, when of sufficient size, will show erosion and thinning of the overlying cortex. Pathological fractures are common. The skull may show numerous punched-out areas of rarefaction. These classical symptoms may be absent in the early stage when it may show only a diffuse osteoporosis of the spine. In this disease the diagnosis may be established on laboratory data such as serum protein, and study of bone marrow obtained by sternal puncture. When the disease is limited to one bone the diagnosis may be established only by biopsy.

Could this lesion be metastatic? That is possible. But the protocol give no clue of any primary carcinoma. There was no anorexia, weight loss or cachexia. Primary malignant tumors of bone are principally a disease of younger age groups. Multiple myeloma and metastatic carcinoma appear in the later ages.

Generalizations cannot, of course, make a diagnosis in this case, but that is all we have

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to go on in the absence of a biopsy.

On the basis of these generalizations, I should make a diagnosis of myeloma.

Howard C. Lawrence, M. D.

Geschickter grossly segregates tumors of bone as to (a) whether they occur as single or multiple lesions, (b) whether the patient is under or over 20 years of age, and (c) whether the lesion is osteolytic or osteoplastic. I shall assume that the pathology in the clavicle and vertebra are the same. We, therefore, have to diagnose osteolytic lesions occurring in a 44-year old woman. This screening process quickly brings metastatic carcinoma and multiple myeloma into the field of major interest.

I have considered but am rejecting the following diagnoses:

(1) Primary chondrosarcoma. This process usually occurs in patients under 30, and the x-ray findings in our patient do not agree with those characteristically seen in this disease.

(2) Osteogenic sarcoma or secondary chondrosarcoma. In this malignancy the x-ray usually shows the original benign exostosis or chondroma on which is superimposed the malignant sign of a fuzzy peritosteal shadow.

(3) Osteolytic forms of osteogenic sarcoma. The age range is usually in the 10 - 20 year group; it is most prevalent in the long bones; and characteristically the cortex is destroyed without expansion.

(4) Bone cyst. This is certainly not a reasonable consideration because the history, physical, and x-ray findings are not typical.

(5) Benign giant cell tumor. This warrants consideration because it is a lytic lesion which characteristically occurs at the epiphyseal end of the bone. However, in even advanced cases giant cell tumors show no periosteal proliferation as did the case under consideration. Further, we would have to explain the fifth cervical vertebral involvement on the basis of a metastasis. Authorities feel that there are no true metastases from giant cell tumors, that such cases are better explained on the basis of progression and degeneration following repeated and ineffectual treatment until an osteogenic sarcoma results. This tumor, of course, is not uncommonly associated with metastatic lesions.

(6) Ewing's sarcoma. This seems an unlikely possibility because it is most common in the first two decades of life, it rarely in-

volves the clavicle, it is commonly associated with systemic symptoms such as fever and leukocytosis, and the x-ray usually shows bone proliferation in parallel rows giving the "onion peel" appearance. Some authors classify a similar or related tumor as "atypical Ewing's sarcoma" or "reticulum cell sarcoma." The information given in the protocol as to the x-ray findings in our case suggests that the diagnosis of reticulum cell sarcoma is a possibility. The deterrents from the diagnosis, however, are its infrequent occurrence, and, more important, the fact that this disease process practically always occurs in children or young adults.

(7) Diseases of the bone marrow and lymphoid tissue associated with osseous changes. One can rather quickly eliminate as reasonable possibilities such disease as Hodgkins, lymphosarcoma, lymphatic and myeloid leukemia and eosinophilic granuloma.

(8) Fibrosarcoma. This appears to be an unlikely possibility for it tends to occur as a single lesion, most frequently in the lower femur and upper tibia. It tends to destroy bone from without, inwardly. The x-ray always shows an extra-osseous shadow, and periosteal proliferative changes are uncommon.

(9) Hemangioendothelioma. This is a rare disease but the protocol describes a case which conceivably could be explained by such a diagnosis. I discard it because of its rarity. Now back to the subjects of major interest — metastatic carcinoma and multiple myeloma.

Let us briefly consider the diagnosis of metastatic carcinoma. Metastasis to bone occurs in nearly 50% of the cases of mammary, renal and bronchogenic carcinomas, and is clinically manifest in about 25% of the cases before termination of the disease.

In metastatic bone lesions arising from breast cancer the bones most commonly involved are spine, pelvis, femur, skull, ribs and humerus. There is usually no tumefaction, the x-ray usually shows an osteolytic process in which periosteal proliferation is uncommon. No mention is made in the protocol re previous breast surgery, nor was any breast pathology noted on the physical examination.

Renal carcinoma with metastasis to bone usually involves the humerus, spine, femur,

pelvis, ribs, bones of the foot, skull or sternum. Secondary bony lesions are common. Geschickter reports 63 cases of hypernephroma in which 22 had bony metastases. We were told that the kidney shadows were of normal size as seen in a plain film of the abdomen. In contrast to metastatic tumors from carcinoma of the breast, lesions of the bone in hypernephroma show a greater tendency to occur as a single focus. I shall admit that our patient may have had a silent renal primary lesion. Nevertheless, I am discarding metastatic renal carcinoma as a diagnosis.

Likewise, our patient may have had a silent bronchogenic carcinoma with bony spread. The negative chest x-ray, however, and the realization that bronchogenic carcinoma is much more common in males encourages me to discard this diagnosis.

Bony metastases from thyroid carcinoma in one reported series occurred in 20% of the cases. Multiple, lytic lesions can be seen in such bony spread. Again, no mention is made of thyroid pathology in the report of the physical examination. I am discarding this diagnosis also.

This brings us back to the diagnosis of multiple myeloma. Clinically pain, tumor and fracture are the characteristic findings. Our patient had the pain and the tumor. Although solitary foci of multiple myeloma have been reported, exceptions are so rare that one is justified in stating that multiple myeloma is always multiple in distribution. This multiplicity may not be clinically evident, but autopsy findings always reveal the foci. There is multiple involvement of the ribs, sternum or clavicles and spine in 90% of all cases. In other words, in nine out of ten patients with multiple myeloma there are tumors of the ribs, sternum and spine; of the clavicle and spine; or the ribs, sternum, clavicle, and spine. About 70% of the patients with multiple myeloma have Bence-Jones protein in the urine, 50% have hyperproteinemia, 50% hypercalcemia. Our patient's findings in this regard were normal. Multiple myeloma lesions by x-ray are purely osteolytic in character, they are rounded in contour and have a central location. When periosteal reaction is present, it seldom is associated with the new bone formation. Pulmonary metastases are conspicuous for their absence. One can ask, if a multiplicity of bone lesions is the characteristic clinical picture,

why do you propose the diagnosis of multiple myeloma when only two bony foci were demonstrated? I quote from Lichtenstein:

"In regard to the roentgenographic findings, we found that the picture conventionally held to distinguish multiple myeloma — that of many bones, including the calvarium, riddled by clearcut punched-out osteolytic defects — represents the exception rather than the rule and applies only to certain cases in which the disease is far advanced. Indeed, very often one observes merely some vaguely defined rarefactions in a number of bones or a single exuberant tumor focus in some one bone (commonly a femur or a humerus, but sometimes a vertebral body, a rib, or a clavicle, an innominate bone, a bone of the calvarium, or some other bone) without obvious involvement of the skeleton generally."

DIAGNOSIS: Multiple myeloma

DIFFERENTIAL DIAGNOSIS

Dr. Gerald G. Garcelon*: In summary, we have a forty-four-year-old woman with a mass involving the medial end of the left clavicle that had apparently been noticed four months previously by the patient and had slowly increased in size. There was no history of trauma, and the past history and physical examination, except for the mass were comparatively negative. The laboratory findings were all within normal limits. No Bence-Jones protein was found in the urine. The x-ray examinations, however, did show some definite pathologic findings.

May I see the films?

Dr. Stanley M. Wyman: The chest films show no intrinsic disease in the lungs, heart or mediastinum. The medial end of the left clavicle is destroyed, and on a heavily penetrated film the lesion can be seen expanding the bone and producing some periosteal reaction. The process is almost entirely destructive. The cervical vertebra described in the protocol appears similar, but the involvement is much less severe. The other bones are not remarkable.

Dr. Garcelon: From the x-ray findings this patient had what appears to have been a completely osteolytic process involving two bones — the left clavicle and the right side of the body of the fifth cervical vertebra, which no evidence of an osteoblastic process except for slight periosteal reaction in the clavicle. The only other information that is not presented in the protocol

*Clinical associate in surgery, Massachusetts General Hospital.

and might help in diagnosis before biopsy is a blood Hinton test and tuberculin test. I should only mention syphilis and tuberculosis as rare possibilities. In acquired syphilis, I believe that, with the exception of lesions involving the skull, the bone lesions as a rule are more osteoblastic in nature. Although tuberculosis of the bone does produce chiefly a destructive lesion, it is much more common in children, affecting the bodies of the dorsal vertebrae and the ends of the long bones, and, in addition it is becoming increasingly rare in this country. As a matter of fact, there is no evidence in the protocol to support a diagnosis of any inflammatory lesion of bone such as osteomyelitis. The normal temperature chart, with absence of leukocytosis and acute pain, is certainly not in keeping with the picture of acute osteomyelitis, and the absence of new bone production in the x-ray films does not favor a diagnosis of chronic osteomyelitis.

My first consideration in a forty-four-year-old woman with an osteolytic process involving more than one bone is certainly that of metastatic carcinoma with the most likely primary lesion arising in the breast. Other primary lesions as a source of metastases to bone, which must be considered but which are much less common, are those of the thyroid gland, kidney, uterus, cervix, ovary, bladder, stomach and lung. I should certainly expect some evidence of the primary cancer on physical examination, but even in the absence of a palpable lesion in the breast or thyroid gland, I cannot completely exclude the diagnosis of metastatic carcinoma in this case.

My second consideration is multiple myeloma. The age of the patient and the destructive lesions in the clavicle and vertebra and certainly in favor of this diagnosis. The absence of Bence-Jones protein in the urine does not rule out multiple myeloma, since this finding is reported as being positive in about 65 per cent of cases. To support this diagnosis one would like to have an increased total serum protein, an increased serum calcium and, in addition, a sternal puncture showing characteristic plasma cells. The usual case of multiple myeloma undoubtedly presents more than two lesions, which are a rule smaller than the lesion of the clavicle in this patient and probably more often affect the skull, ribs and pelvis. Even though the characteristic laboratory find-

ings were not present and only two bones were involved in the destructive process, it is difficult to exclude multiple myeloma completely as a possible diagnosis in this case.

The next group of lesions to be considered are the primary neoplasms of the bone. In this consideration, one must assume that the process is multiple or that there is a metastasis from one bone to another. I believe that both these assumptions are quite rare although possible. Of the benign bone tumors, the lesions that are more likely to simulate the x-ray findings found in this patient are the benign giant-cell tumors, the chondromas and the eosinophilic granulomas.

Benign giant-cell tumors usually occur in adults and cause destruction of bone with expansion and perforation of the cortex similar to what was seen in this patient's clavicle. However, there is usually no periosteal reaction; the lesion is more frequently asymmetrically located in the epiphysis of the long bones, and almost always trabeculae are present in the destroyed bone until late in the disease. There is some question about whether a giant-cell tumor ever metastasizes as such, and I believe that the general opinion is that a metastasis occurs only after sarcoma has developed in the giant-cell tumor. Since this occurs almost always as a result of inadequate repeated treatment, I do not believe that this patient had a malignant variant of the giant-cell tumor. Benign chondromas may produce central bone destruction with thinning and expanding of the cortex. Cases of multiple bone involvement are reported, but these lesions are usually found in younger patients than the one under discussion. Eosinophilic granuloma produces a central destruction of bone with expansion of the cortex. It is almost always solitary, however, and usually affects the pelvic or skull bones of children or young adults. I believe the lesions are usually small and do not attain the size of the lesion in this patient's clavicle.

Of the primary malignant bone tumors one must certainly consider osteogenic sarcoma. Although these tumors usually occur in the age group of ten to twenty years, they may occur at any age. The common sites are the lower femur, upper tibia and upper humerus, but the clavicle and vertebra may also be affected. The usual x-ray picture is one of central destruction extending through unexpanded cortex

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SEARLE

and resulting in periosteal reaction. The x-ray picture, however, can be extremely variable and may show destruction with expansion as seen in this patient. I should expect a greater degree of invasion into the soft tissue if this patient had osteogenic sarcoma. Ewing's sarcoma is extremely rare after the age of twenty-five years. The characteristic x-ray picture is one of widening of the shaft caused by stimulation of new bone formation in parallel layers endosteally and subperiosteally raising the periosteum in "onion-peel" fashion. Later in the disease the tumor may produce areas of destruction in the medulla and cortex. The disease frequently metastasizes to other bones. This patient may have had an atypical Ewing sarcoma, but with the information at hand the odds are very much against it.

Diseases of the bone marrow and lymphoid tissue — such as Hodgkin's disease, lymphosarcoma and lymphatic leukemia — occasionally produce change in bones, but there is no apparent characteristic picture by x-ray examination since these may be either osteoblastic or osteoclastic. In the absence of any other manifestations, it seems most unlikely that this patient's bone changes were due to one of these conditions.

After discussing the various possibilities in the differential diagnosis of this patient, I still come back to my first consideration as the most probable diagnosis — that is, metastatic carcinoma. I certainly cannot exclude this diagnosis with the information at hand, and I believe that in a forty-four-year-old woman with more than one bone involved in an osteolytic process, the odds are highly in favor of metastatic carcinoma.

About the source of the metastases, I cannot place the site of the primary lesion since the physical examination was reported as having been negative; however, in a woman of this age, without evidence of a palpable tumor in the breast or thyroid gland and a normal chest film, I should favor hypernephroma as the most likely possibility.

Dr. Theodore L. Badger: The early history is not entirely accurate in that the patient complained of pain in the joints of the fingers, wrists and shoulders, with discomfort but no redness or swelling of the sternoclavicular joint. No redness of any joints was present, but fusiform swelling of the fingers, particularly the

left fourth metatarsal joint, was noted. Otherwise the examination and laboratory studies were noncontributory. This was four months before the admission described in the protocol. The patient was treated with hot soaks and aspirin and thought to have a mild rheumatoid arthritis rather than rheumatic fever. No thought of neoplasm, syphilis or tuberculosis entered the differential diagnosis. She was told to return but did not do so for a little over three months. At that time, two weeks before admission, she was still having multiple joint pains, but there was a redness, slight swelling and much tenderness over the left sternoclavicular joint were taken, without suspicion of the lesion described in the left clavicle. No tuberculin test was done.

CLINICAL DIAGNOSIS

Rheumatoid arthritis.

?Myeloma

DR. GERALD G. GARCELON'S DIAGNOSIS

Metastatic carcinoma to left clavicle and fifth cervical vertebra, ?hypernephroma.

ANATOMICAL DIAGNOSIS

Multiple myeloma

PATHOLOGICAL DISCUSSION

Dr. Winfield S. Morgan: Dr. Taylor, you operated on this patient; will you tell us your findings?

Dr. Grantley W. Taylor: The operation on this patient was an excision of the left clavicle. A low collar incision was made over the left clavicle, and the platysma was divided. The clavicle was severed near the junction of the middle and outer thirds and the proximal two thirds of the bone so as to include any extension of the tumor into the soft parts. After the operation the patient got along very well.

Dr. Hanelin: The roentgenogram of the resected medial portion of the left clavicle shows extensive bone destruction in association with a soft-tissue tumor that extends beyond the confines of the bone.

Dr. Morgan: Microscopical sections of the clavicle showed extensive replacement of the bone-marrow portion by sheets of myeloma cells. Cytologically, this case would fall into the intermediate group as defined by Lichtenstein and Jaffe,(1), consisting of cells of varying size and shape some of which were somewhat larger, with two or more nuclei and some of which were very large with bizarre hyperchro-

matic nuclei. One feature common to all the cells was the presence of abundant eosinophilic cytoplasm.

This woman's clinical course was interesting. The excision of the clavicle took place in 1941. Annual roentgenograms of the chest, spine and pelvis during the next three years failed to disclose any new bony lesions. However, in 1945, the skull showed numerous areas of diminished density that had appeared since the last observation. There were similar areas in the ribs, the right and left iliac bones and the neck of the left femur. Several months later she fell while hurrying to catch a train and suffered a mild compression fracture of the ninth dorsal vertebrae. Two years later x-ray findings were about the same.

Interestingly enough the patient was well and active during this period. In 1951 she fell while ice-skating and experienced immediate pain in the lower back for which she was admitted to the hospital. At this time the bones of the lumbar spine and pelvis appeared somewhat more osteoporotic than before. There was little change in the lesions in the iliac bones, and no evidence of a new fracture. The urine had a specific gravity of 1.014 and gave a two plus test for albumin; the sediment contained occasional white cells per high-power field. The serum total protein was 6.7 gm., the albumin 4.75 gm., the globulin 1.95 gm. and the nonprotein nitrogen 25 mg. per 100 cc.

In July, 1952, the patient was again admitted to the hospital because of pain in the lower back with radiation down the left leg. The urine gave a three plus test for protein, all of which was Bence-Jones protein. Examination of the blood revealed a hemoglobin of 8.6 gm. per 100 cc. There were no plasma cells in the smear. The patient was given x-ray therapy to the spine and blood transfusions, with only transient improvement. Progressive renal failure necessitating several admissions developed, and she died in uremia four months later.

At autopsy the general body organs were not remarkable except for the kidneys, which weighed only 160 gm. together. Microscopically, they showed the typical features of myeloma kidney in which the distal tubules were distended with large masses of eosinophilic material. The bone-marrow cavities of the spine, right ilium and ribs were replaced by pinkish,

jelly-like material, which microscopically had the same appearance as the lesion in the clavicle removed eleven years before.

This case is of interest for several reasons; firstly, a duration of eleven years after removal of the first lesion is unusual and suggests that the presence of multinucleated cells with bizarrely shaped nuclei does not necessarily indicate a rapidly growing lesion; secondly, the total serum protein remained at normal levels throughout the course, and there was never a hyperglobulinemia; thirdly, despite the diffuseness of the bony involvement, no leukemoid element ever developed, and plasma cells were never identified in the smear; fourthly, Bence-Jones protein was found only during the last two years; and finally, there was no evidence of amyloidosis at autopsy, a development that one might reasonably expect in a case of myeloma of this duration.

The relation between the solitary myelomatous tumor and multiple myeloma is still a matter of dispute in some quarters. This case has demonstrated the development of multiple lesions several years after the diagnosis of a solitary one, and offers support for the view that these two conditions are probably variations of the same disease. The similar cytology of the tumor in the initial lesion and that found at autopsy would be further support for that contention.

Dr. Bernard M. Jacobson: I first saw this patient six months before she died. At that time the stained blood smear showed no diagnostic abnormalities. The sternal-bone-marrow aspiration revealed 29 per cent of the marrow cells to be members of the plasma cells series, 18 per cent mature plasmacytes and 11 per cent proplasmacytes or "myeloma" cells. A single urine specimen contained a large amount of protein, all of which was Bence-Jones protein. Detection of this protein is not always easy, and it is quite possible that many of the routine laboratory reports of "no Bence-Jones protein present" during the preceding few years were incorrect. Ten days after I first saw the patient, a specimen of serum was taken and by the usual fractionation method showed an albumin content of 4.60 gm. and a globulin content of 1.29 gm. per 100 cc.

In my opinion, one cannot be sure that the initial clavicular lesion eleven years before death

represented a so-called solitary myeloma. The absence of other skeletal lesions, the normal hemoglobin content and the normal blood chemical findings together do not rule out multiple myeloma. If a bone-marrow aspiration at that time had been carried out and the marrow found to be normal, I should tentatively accept this case as one of solitary plasmoma. If we assume that this patient had multiple myeloma eleven years before death this case represents a long duration indeed. In his monograph on the clinical and pathological aspects of myeloma, Magnus-Levy(2) cites from the older literature cases of long duration with well established diagnoses of multiple myeloma. His Case 13, ascribed to Groves, lived fourteen years after the known onset of the disease, but this is the only case gathered by Magnus-Levy whose duration exceeded that of the present case. On the other hand, if we assume that this patient's initial lesion consisted of a solitary myeloma we must conclude that dissemination took place at least four years later, when the generalized skeletal lesions were found. This course conforms to that of the vast majority of cases of so-called solitary myeloma. The subject was thoroughly reviewed by Gootnick (3) in 1945. A small proportion of cases may be considered a benign type of tumor, but the vast majority showed dissemination and the clinical evidence of multiple myeloma within a few months or a few years after extirpation of the initial lesion. Unfortunately, most of the cases in the older literature considered to represent solitary plasmoma were not initially studied from the point of view of the bone-marrow histology. In this hospital the incidence of solitary plasmoma is probably not more than 1 in 100 cases of multiple myeloma. It is an exceedingly rare disease.

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1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
 2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
 3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
 4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
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VOLUNTARY PENSION PLANS FOR SELF-EMPLOYED PERSONS*

The following explanation of the Jenkins-Keogh bills was prepared by Congressman Eugene J. Keogh primarily for the purpose of assisting members of the House and Senate in answering an ever-increasing volume of correspondence from constituents. It covers the amendments of July 18, 1955. This amended bill was made a part of the omnibus tax bill that

has not yet been reported out by the House Committee on Ways and Means. — ED.

PURPOSE. — Under present law certain tax advantages are extended to participants in qualified employee pension and profit sharing plans. These tax advantages include postponement of the tax that otherwise would be payable by the individual beneficiary on annual contributions to the plan until the pension benefits are paid out, a similar postponement of tax on the interest earned on funds held for the plan in trust, and capital gains treatment on certain lump sum distributions under the plan. The provisions dealing with employee pension and profit sharing plans were thought desirable as a means of encouraging private provision for the cost of old age, thereby relieving the federal, state, and local government of much of this responsibility.

This bill corrects what in the opinion of its proponents amounts to a serious inequity created by the fact that the large group of self-employed persons are foreclosed under present law from establishing retirement savings programs that will permit them to enjoy the same tax advantages that are extended to employees under qualified plans established by their employer.

Qualified Persons. — The benefits of this bill are extended to all persons who are subject under the Social Security Act to the tax on self-employment income; in addition several categories of persons who are exempted from the tax on self-employment income and not now covered by the social security program will receive benefits from the bill. These additional categories include physicians, lawyers, dentists, osteopaths, veterinarians, chiropractors, naturopaths, optometrists, Christian Science practitioners, ministers of a church, and members of a religious order. A person who is self-employed and who also is an employee covered by a qualified employer plan or a government retirement plan may still be covered if more than 75% of his earned net income is derived from self-employment.

Eligible Pension Funds. — The bill provides a limited deduction for contributions into certain specific types of retirement savings programs. These include restricted retirement funds estab-

*Reprinted from J.A.M.A., April 7, 1956

lished for the exclusive benefit of participants in which the contributions are held in a trust, custodian accounts, and restricted retirement life insurance or annuity contracts.

In the case of restricted retirement trust funds and custodian accounts the following conditions must be met. 1. Participant rights must be non-assignable except for permission to designate a beneficiary or to elect a joint and survivor annuity with a dependent or spouse. 2. The trustee or custodian must be a bank, and investments by the trustee or custodian must be controlled by trust indenture and local law except that the trustee or custodian may purchase a restricted annuity contract. 3. Except for the total and permanent disability of the beneficiary, there can be no distribution of interests to participants before age 65. Distribution thereafter can be in any form. In the case of a restricted retirement life insurance or annuity contract the contract must be purchased from an insurance company and it must meet the conditions described in 1 and 3 above.

Limitations on the Amount of Income Tax Deductions for Payments to Eligible Pension Funds. — The annual contribution to a pension fund for which the self-employed individual may take a tax deduction is limited to 10% of his earned income or \$5,000 a year, whichever is less, but the aggregate deduction during the individual's lifetime cannot exceed \$100,000. The bill provides a carryover feature to take care of the situation where the individual does not invest up to the above limitation in a particular year. In this case a deduction may be taken in the current year for contributions in excess of 10% of earned income up to a limit of \$5,000. However, a carryover from a particular year must be used within one of the five succeeding years.

A special rule is provided for taxpayers who are beyond the age of 55 on the effective date of the bill. The limitation on their annual exclusion is raised by 1% of earned income, or \$500, for each year by which the taxpayer's age exceeds 55 on the effective date, except that the increase shall not be credited for more than 20 years. This rule works in the following way. A taxpayer who is age 65 when the bill becomes effective may increase his annual limitation by 10 percentage points or by 10 times \$500, so that he can deduct for tax purposes in each year up to 20% of his earned income,

or \$10,000, whichever is less, if he makes that large a payment into an eligible pension fund. If the taxpayer is age 75, the limitations would be raised to 30%, or \$15,000, whichever is the lesser. The limitation does not extend beyond this point even though the taxpayer is over 75.

The definition of earned income used in the application of these limitations corresponds to the definition of self-employment income that is used in calculating the social security tax on self-employment income except, of course, the income of the specially included categories, such as ministers and physicians, is included for this purpose. In the case of contributions made by a self-employed individual to a restricted retirement insurance contract providing both life insurance and annuity benefits, the portion of the contributions properly allocable to life insurance benefits as distinguished from the equity acquired is not allowed as a deduction.

Treatment of Distributions. — Amounts distributed from a restricted retirement fund, except in a lump sum, shall be taxable as an annuity with the investment in the contract limited to contributions that have not previously been deducted from gross income. Thus, any deduction from taxable incomes on account of a distribution is limited to contributions for which no tax benefit was previously received. If the taxpayer has been able to deduct all his contributions, then the whole of each annuity payment must be included in gross income.

Amounts received by the estate or beneficiary of the taxpayer from an insurance contract qualifying as a fund will be includable in the decedent's gross estate for tax purposes, but benefits, other than life insurance benefits, will be taxable as income to the estate or beneficiary. If the entire amount in the restricted retirement fund is distributed in a lump sum it will be taxable as a long-term capital gain but only if the fund has accumulated over a period greater than five years.

Miscellaneous Provisions. — Contributions made to an eligible fund within 60 days of the close of the year may be treated as payments made in the prior year. This is designed to deal with the problem faced by self-employed persons who might not know their exact income at the end of the taxable year and thus would not know precisely how large a deduction would meet the 10% test.

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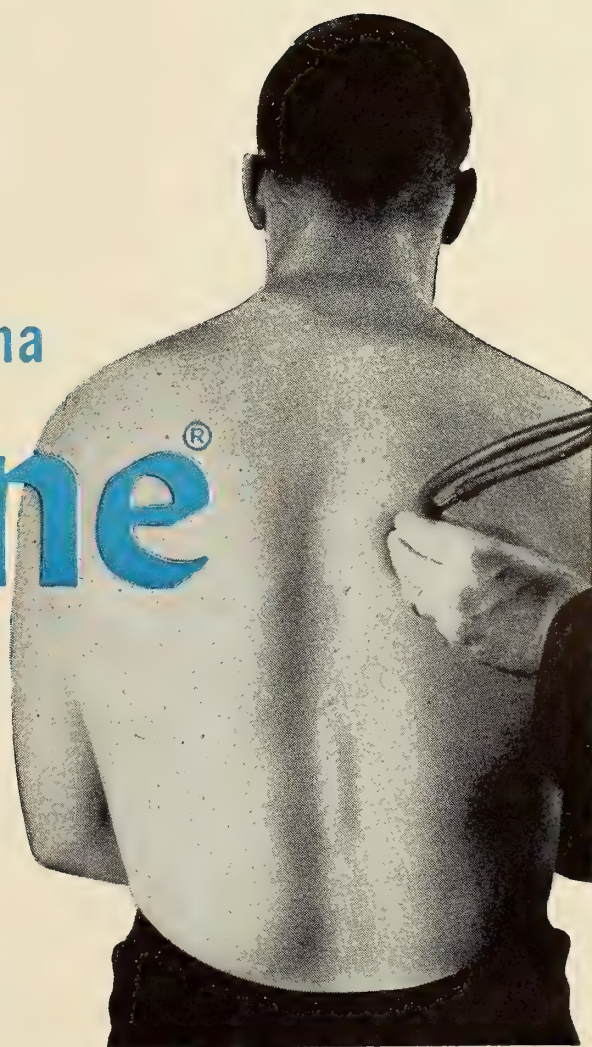
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TOPICS OF *Current Medical* INTEREST

RX., DX., AND DRS.

By Guillermo Osler, M. D.

THE Thoracic Surgeons (Am. Ass'n. for Thor. Surg.) had quite a meeting at Miami Beach. The huge Hotel Fontainebleau is pretty rich for a steady diet and, even out of season, was fairly expensive. . . . Hundreds of eager and bright young non-members were on hand to audit the sessions and to help give some of the startling reports. . . . Almost every type of heart lesion is eligible for surgical correction. There are a dozen methods of extra-corporeal shunts, and methods of oxygenating blood. Membranes, discs, huge machines, and inexpensive tin-can models were described. . . . The technics of cutting valves and closing septal defects should soon reach some sort of best solutions. . . . There were several topics on surgery of the lung which were notable. The successful use of lobectomy for certain types of lung cancer, previously reported by Jones, Robinson, and Meyer, was confirmed. The complications of segmental resection are leading some surgeons to do more lobectomies. The use of extra-periosteal (subcostal) polombage received the most extensive and surprising discussion, with lucite spheres, plastic 'doughnuts', folded plastic sheets, and parafin all being mentioned in 150 to 1,000 cases of each. . . . We are sad to say that Dr. Paul 'Buck' Samson resigned as secretary of the society. His yearly reminder has always produced a mention of the meeting here, and he is a constant reader of ARIZONA MEDICINE. He is president of the American Trudeau Society for this next year so he'll doubtless have things to do with his spare time.

A major pleasure at MEDICAL MEETINGS is the chance to see old friends. We can hear of medical progress, or present a paper, or relax, but the best chance of all is to renew friendships. . . . There is always the sadness of saying goodbye again, especially if it seems probable that one may not cross paths soon, or possibly ever. . . . Lest this sentimentality become too depressing we can quote Dizzy Dean, the baseball announcer, enant a return to one's home, — "It looks like a hit folks. Nope, it's just a long foul. Well, there go the runners back to their respectable bases!"

Your friends in San Francisco have probably been shocked by the recent announcement that it is the most 'alcoholic' city in America. Dr. Ellis Sox, the City health director has said "San Franciscans aren't as well adjusted as other Americans. It's an emotionally sick community."

. . . A ten-cent psychiatrist named G. Osler suggests that a lot of those poor people are frustrated because they don't live in Los Angeles. And maybe the Angelenos are disturbed because they don't live in Arizona.

Dr. Linus Pauling of Cal. Tech. is a great atomic and MOLECULAR CHEMIST, as proved by his Nobel Prize, and in spite of the Immigration Department. He has recently been concerned with PROTEIN STRUCTURE, and its connection with disease. . . . Ciba's 'Medical News' got an interview with him on the four greatest areas of medical interest. One is the "sequence of amino acids in the basic structural element (the polypeptide chain) of the protein molecule." A second is the mode of action of enzymes. Another is the biosynthesis of proteins in tissues. The fourth is the field of 'molecular diseases', in which he is a pioneer and discoverer. The known molecular diseases are sickle cell anemia and phenylpyruvic oligophrenia. He believes that muscular dystrophy will also turn out to be a molecular disease. . . . The pride of most of us can be spared if we haven't seen one of the 'phenyl' cases, since all the patients are children.

The work of Baer and colleagues of Rochester, N. Y. has pulled the bath-mat from under those people who have tried to prevent acute fungus infections of the feet by foot sanitation in public bathing places. . . . Apparently it is possible to contaminate, but not infect, the skin of normal subjects. Exogenous exposure plays a minor role, they say, in acute dermatophytosis of the feet. . . . Public and individual measures should be based on the "maintenance of local resistance", which could mean anything from drinking orange juice to shots of immune globulin.

The Electrodyne Co. of Norwood, Mass, has a notable series of machines for diagnosis and treatment of CARDIAC ARREST. . . . They have been known for devices which act as "Pacemakers" (in Stokes-Adams syncope, etc.), and cardiac 'Defibrillators' for use during surgery. . . . They also have other stimulators, but now have a visible and audible heart monitor, or 'Cardiac Alarm'. It gives a signal at the onset of ventricular standstill or fibrillation.

TIME Magazine gives a jolt to those who think that soap is a sterilizer. It has been known for years that bars of soap carry 'germs', but



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MEDICAL DIRECTOR
DUKE R. GASKINS, M. D.

Dear Doctor:

It was a pleasure to have seen so many of you at the Arizona Medical Association meeting held in Chandler at the San Marcos during April. I want to express my thanks for the fine job that was done by the Executive Secretary and all who took part in organizing the meeting.

I haven't always been able to attend these meetings in the past and realize I have missed some very worthwhile meetings.

I look forward to seeing each of you in the near future and if you have anything you would like to discuss about HBA, or if I can answer any questions you might have, don't hesitate to call on me.

HOSPITAL BENEFIT ASSURANCE

Sincerely,

D. R. Gaskins, M. D.
Medical Director

DRG:bw

a Johns Hopkins Hospital study showed that their own soap contained as much as 3,500,000 organisms per cc. Solutions used for rinsing gloves and instruments picked up bacteria from staff clothing. . . . From now on the hospital will sterilize the soap containers (by steam under pressure), and add chemical germicides to rinsing solutions.

This column is not preoccupied by **SUICIDE** even tho several items have appeared in past years. Suicide is hard to analyze, hard to predict, and various authorities have varied opinions about it. . . . About 20,000 American commit suicide per year, but five times as many try it. Shneidman and Tarberow analyzed 64 psychotics, half of whom had had suicidal impulses. It was impossible to pick out the potential suicides from the history. Many people threaten it and fail to act, but everyone who acts has threatened it. . . . The only emotional ills which predisposed were very severe depression and delusions of persecution. . . . Those who only threatened may be more disturbed by guilt, agitation, irritability, and aggression. . . . These are slender leads, but may help to alert a physician.

Dr. Alvarez, who hasn't been mentioned here in 2 months, now carries his ideas about "little strokes" to a stronger, and even younger conclusion. . . . He has stressed the fact that many oldsters can have clinically unrecognized "little strokes" which change their personality and life. This can occur at 40 or 50 years of age. Some may actually have dozens of them. . . . Now he says (in *GERIATRICS*, Dec. 1955) that persons in their 20's and 30's may suffer "little strokes". Same atypical picture, same peculiar results.

Dr. Charles E. Smith of Berkeley, long the 'head-man' in 'VALLEY FEVER' work in the west and southwest, reports that his blood serology tests are 99½% effective in determining dissemination. The hazard is its possible dissemination which may be fatal. The incidence is highly dependent on race, — about 1 to 2 per cent of the infections in white people disseminate; the number is several times greater in negroes; and Filipinos are horribly susceptible (300 to 400 cases per thousand infections). . . . A Filipino would be foolish to live in an endemic area, where from 60 to 100 percent of the residents show infection by skin-tests.

The Number One American health problem is **chronic disease**. There are 5,500,000 chronically ill people in the United States. . . . Longevity is given some of the blame. Failure to use methods of preventive medicine, particularly mass diagnosis, is also responsible. . . . The greatest load of blame is placed on the physicians who use new therapy only after a long

lag-period. . . . The National Health Forum hopes to work on all of the angles with greater intensity. It is estimated that 2,000,000 of the chronically disabled could be returned to employment.

The British 'Nutrition Society' was told that **ANEMIAS** in Eire, India, and among members of a vegetarian group are due to a protein-deficient diet. This is especially notable in pregnant women, but hard to diagnose by clinical signs, without blood counts. . . . The vegetarians developed combined cord degeneration, due to a vitamin B12 deficiency.

An odd case of "depot penicillin" has recently been seen. The term is used in an unusual sense, since it applies to a pleural fluid which formed after a pneumonectomy, and which presumably became loaded with penicillin from the pre and post-op. therapy, and from a dose left in at the time of surgery. . . . The patient developed an obscure fever, described a previous 'reaction' to the drug, and the temp. of 101° lasted for weeks. The fluid was sterile and no other cause was present. . . . He improved slightly when fluid was removed and replaced with air, thus decreasing the negative pressure; when antihistamines were given; and when time passed and the fluid became organized. . . . No assay for penicillin was made.



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*Moyer, J. H., and Hughes, W. M.:
J. Chron. Dis. 2:678, 1955.

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HISTORY

JOHN JOSEPH McLOONE, SR., M.D.

January 26, 1880 — December 26, 1941

Dr. John Joseph McLoone was born January 26, 1880, in Dublin, Ireland. His father, who was in the wool and linen exporting business, brought him to Philadelphia, Pennsylvania as a young boy, where he attended Cahill Catholic High School and graduated with honors from the Catholic University of America in Washington, D. C. as a chemist. He later became a registered pharmacist and practiced pharmacy while working his way through the George Washington University, School of Medicine in Washington, where he graduated as the Valedictorian of his class. After serving his residence-ship in the Episcopal Eye, Ear, Nose and Throat Hospital in Washington, he accepted a position as assistant in the Eye, Ear, Nose and Throat Department of the Colon Hospital in Panama and later became Chief of this service.

In 1914, at the suggestion of Attorney Brady O'Neill, brother of the famous Rough Rider, Bucky O'Neill, whom he had known in Washington, he came to Phoenix and opened his office in the O'Neill Building, located at the present site of the Phoenix Title and Trust Building. As his practice grew to one of the largest in the Southwest, he moved to the Goodrich Building, then to the Heard Building and finally to the Professional Building when it opened in 1932.

In 1934, Dr. McLoone suffered a stroke and retired from active practice. In 1938, his estate on North Central Avenue, was purchased by Dr. J. N. Harber, after which he moved with his family to Santa Monica, California, where he passed away on December 26, 1941.

During his years of active practice, he made several trips abroad, visiting his birthplace and also doing post-graduate work in the University of Vienna, the University of Bordeaux and in London. In 1928, he presented a Paper at the Otolaryngological Congress in Copenhagen, Denmark. He also found time for many Civic interests in Phoenix and was an active member of the Kiwanis, Elks, the Knights of Columbus and was a member of the Board of Directors of Brophy College. He contributed noticeably to charity, always remembering the great opportunities America and The Valley of the Sun had given him to attain success and prominence

as a physician and surgeon.

He served as Chief of the E.E.N.T. service of St. Joseph's Hospital and instructed the nurses of that hospital for many years. He also served as Chief of Staff of St. Joseph's Hospital and was elected President of the Maricopa County Medical Society in 1932.

He was certified by both the American Board of Ophthalmology and Otorhinolaryngology and was nationally known for his work in Otology. He was an active member of the American Ophthalmological Society, the American Academy of Ophthalmology and Otolaryngology, the American Laryngological, Rhinological and Otological Society, the Pacific Coast Otolaryngological Society, the American Board of Ophthalmology and the American Board of Otolaryngology and contributed frequently to the publications of these Societies and lectured at their National Meetings. He was admitted to the American College of Surgeons in 1921.

He was survived by his wife, six children and two Sisters, members of the Sisters of Notre Dame.

Postscript:

An important page in the history of medicine in Arizona was written by the life of Doctor John McLoone, who died in December 1941.

He was a short, rather rotund, important and dignified man, with a sometime Napoleonic seriousness about him. His pronouncements were respected and he made up in ideas what he lacked in stature.

The document presented here was collected by Doctor John McLoone, Jr., who is also in the practice of Ear, Nose and Throat diseases in Phoenix. Another son, Edward McLoone, M. D., is in Orthopedic Surgery here in Phoenix as well.

Howell Randolph, M. D.

ARIZONA BLUE SHIELD

THE 8TH annual meeting of Arizona Blue Shield was held April 25th at the San Marcos Hotel, Chandler, in conjunction with the annual convention of the Arizona Medical Association. The House of Delegates of the state medical group, the Blue Shield corporate body, elected the following officers, board members and professional committee members: Officers, Dr. G. Robert Barfoot, Phoenix, president; Dr. Virgil



Drs. Geo. Barfoot, Donald A. Polson and David Engle.

Toland, Phoenix, president-elect; Dr. David Engle, Tucson, vice president; Dr. Noel Smith, Phoenix, secretary; and E. N. Holgate, Phoenix, vice president of the First National Bank, treasurer. Board Members, Dr. Barfoot, Dr. Smith, Dr. Arthur Stevenson, Dr. L. L. Tuveson, and Dr. Carl Holmes, all of Phoenix; Dr. Fred Lesemann and Dr. Stuart Sanger, both of Tucson; and Dr. Paul Slosser, Yuma. New lay members are Don Leahy and Victor I. Corbell, both of Phoenix. Professional Committee, Dr. C. C. Piepergerdes and Dr. James Barger, both of Phoenix, and Dr. Stuart Sanger, Tucson.

Membership on the board of directors was increased from 15 to 20 members, and for the first time a provision was made to elect a president-elect.

L. Donald Lau, executive director of the plan gave his 1955 progress report. Included were these salient points: At conclusion of last year there were 127,564 Blue Shield members in the state; 1955 income was \$1,230,734.52, with \$905,491.99 of this being used to provide care for the members. Lau pointed out that for the fifth consecutive year the plan was the recipient of first place award for its public relations program in competition with Blue Shield plans all over the country by the Blue Shield Commission, Chicago.

Other priority items discussed by the House of Delegates were:

1. A decision not to pay for services rendered Blue Shield members by osteopaths.

2. Passing resolution to provide office and out-patient hospital minor surgery payments.

3. Passing the resolution to provide for non-hospitalized diagnostic pathological and radiological service payments.

4. Passing the resolution to permit medical doctors to accept surgical and medical fees from private commercial insurance companies over and above and in addition to the Blue Shield allowance.

5. Passing the resolution to establish separate fees for physicians acting in assistant surgeon capacity in major procedures.

6. A resolution was passed to set up a joint commission, consisting of the 20 members of the Blue Shield board of directors and a like number appointed by the Council of the Arizona Medical Association to inquire into the desires of all Participating Physicians as to whether (1) Arizona Blue Shield should be liquidated (assets returned to the subscribers as set forth by law; or (2) whether the plan should continue as is on a part service-benefit and indemnity basis; or (3) convert to a straight indemnity plan; or (4) convert to a straight service-benefit plan. A report of the action of this committee will be made next year at the annual meeting.

ARIZONA LICENSURE TEMPORARY PERMITS

FREQUENTLY, question is raised as to the possibility of obtaining a temporary license or permit to practice medicine and surgery in the State of Arizona, authority therefor and requirements exacted. Unquestionably there is need for enlightenment, and this article is submitted by the Board of Medical Examiners of the State of Arizona in the hope that the doctors of medicine practicing in this State may better understand the governing statute and policy of administration.

First, let us refer to the statutes. Article II, Section 34-1427 (A.R.S., 1956) contained in Chapter 13, Medicine and Surgery, dealing with "temporary license or permit" reads as follows:

"A. When the services of an applicant are needed as an emergency in any community, the Board may grant to a graduate of any college or school of medicine and surgery approved by the Association of American Medical Colleges, a temporary license or permit to practice medicine and surgery in such community. **A temporary permit or license shall be valid only until the next regular meeting of the Board**, when the applicant must appear for regular examination, or for such limited time thereafter as is essential only to grade the applicant's examination papers to determine eligibility for or denial of a certificate to practice medicine and surgery and the issuance thereof.

"B. Two renewals of a temporary license may be granted if the renewals immediately and consecutively follow the quarter for which the temporary license was issued, **and then only to provide sufficient time for an applicant to take two consecutive basic science examinations**, if required.

"C. Only one temporary license and two renewals shall be issued to any person. A temporary license shall not be filed with the county recorder."

Referring to Article I of this same Chapter, Section 32-1401 (A.R.S., 1956) Definitions, an "emergency" is described as follows:

"1. 'Emergency' means the inability of the local physicians and surgeons in any community to meet conditions effecting the public

health that may arise suddenly and unexpectedly by reason of fire, flood, explosion, epidemic, pestilence, or like disaster, or through some unusual occurrence or condition which in the judgment of a majority of the Board constitutes an emergency."

This Board is directly responsible to the Governor of the State of Arizona in the administration of this Act. Its duties are to medically safeguard the citizens of the State including physicians and surgeons practicing in Arizona **regardless of their affiliation with local, state or national medical societies or associations**, by regulating the practice of medicine and surgery by physicians and surgeons of this state. Regulation is accomplished by licensure and by standards of practice for those already licensed.

It has been customary in the past, and the Board still follows such practice, to contact the local medical society for a statement regarding local situations at the time temporary licenses are being considered. It is pointed out that the Board is not bound to make a decision by any reply from the society. The reason for this is obvious. It is the responsibility of the Board and the Board alone to administer the provisions of the Medical Practice Act. Timing is of the essence, and it is recognized that many societies meet only once a month and due to the emergency frequently do not have time to canvass its membership. A decision could be biased, and the Board is required to use its best judgment in the interest of the health and welfare of the people of this State. The process is used as just one method of its endeavor to obtain an overall picture of the existing situation locally. Sometimes the Board agrees with the local society — sometimes it disagrees.

May we reemphasize that temporary licenses or permits are issued only on the basis of an established community "emergency," with the understanding that such licensee has good intention, and will proceed forthwith, to qualify for permanent licensure. Temporary licenses are not issued as a convenience to an applicant seeking licensure to permit of immediate practice during the period of qualification therefor; nor as a vacation substitute, excepting in this latter instance, wherein this Board declares that a community emergency exists.



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Organization Page

CIVICS — NORMAN ROSS, M. D.

THE review of the Blue Shield program as voted by the House of Delegates at the Annual Meeting is a matter of greatest import and interest to each of us. This is one problem that calls for the individual member's interest in, and knowledge of, his state medical organization's activity. The appointment of a committee is proper, but it isn't the complete answer.

Such terms as indemnity and service programs, mutual and stock insurance or assurance companies must be not only recognized by we Arizona physicians, but clearly understood by each of us. Blue Shield is a Mutual Plan. We must, therefore, know the public's interpretation of this plan, of these and other insurance terms.

* * *

Rest Homes are the names given to the privately owned health establishments that have been the cause of so much concern in our state, over the years, by our medical societies. Medicine has nearly continuously reviewed them with an eye as to their business practices and standards of care.

We are informed that the reorganized Nursing Home Association plans to request classification by the State Health Department similar to those of states such as New York and Calif. Group advises that at present there is only one form of licensure for nursing or rest homes in the state. This procedure does not follow the recommendations of the Maricopa County Rest Home Committee which recognized the difference in service of those institutions employing graduate nurses as opposed to nursing homes furnishing only bed and board.

Regulation or supervision of such activity is in the public interest. Requesting Legislative assistance has been considered. It may be that the State Health Department by expanding present licensure and by rules and regulations can perform this great public service.

* * *

AMERICAN CANCER SOCIETY, ARIZONA DIVISION, 1429 North 1st Street, Phoenix, Arizona.

A new policy on the Service Program of the American Cancer Society, Arizona Division, re-

ceived approval of the Executive Committee at its meeting on April 17th. Chairman of the Service Committee is Paul B. Jarrett, M.D. of Phoenix. The new policy will be published after the full Board meeting in June.

Dates for the Annual Cancer Seminar have been set. They are January 10, 11, and 12th, at the Paradise Inn in Phoenix, Co-Chairmen for the event will be Dr. Edward H. Bregman and Dr. James D. Barger of Phoenix.

The Society wishes to draw all possible attention to Dr. Charles S. Cameron, Medical and Scientific Director of the American Cancer Society, recently published book "The Truth About Cancer".

One of the foremost authorities on the total cancer problem, Dr. Cameron is well known to Arizona physicians.

The Executive Committee has approved a plan for the organizing of local "Units" of the Society in every county in Arizona. As soon as possible this organization will begin. The first step in the plan is to secure the approval of the local Medical Society.

* * *

MUSCULAR DYSTROPHY ASSOCIATION OF AMERICA, INC., Maricopa County Chapter, 4431 North 7th Avenue, Phoenix, Arizona; Pima County Chapter, 743 North Stone Avenue, Tucson, Arizona.

An experimental strain of dystrophic mice soon will be available as an important research tool to scientists everywhere.

The mice named "Funny Feet" for their peculiar walk, inbred since 1951 at the Jackson Memorial Laboratory in Maine, were found by research workers to be suffering from an inherited disorder closely resembling muscular dystrophy in humans.

As probably the first recorded instance in animals of such an inherited muscular involvement, the importance of the discovery was hailed by the MDAA Medical Advisory Board whose chairman is Dr. Ade T. Milhorat.

These dystrophic mice will almost certainly become a basic tool in a new Muscle Research Center, the most significant project undertaken to date by MDAA.

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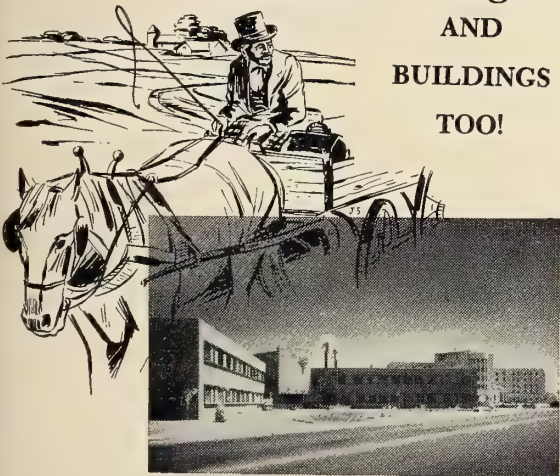


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Notes from the EDITORS' PEN

RECOMMENDED READING

Bulletin Vol. 1, No. 6 noted, in part, the ILO's stand in relation to socialization of medicine. *MEDICAL ECONOMICS*, March, 1956, page 181, carries an article entitled — "Let's Stop Paying the ILO to Socialize Medicine." This is an authoritative presentation by Louis H. Bauer, M. D., former president of the AMA and Secretary General of the World Medical Association (not a UN subsidiary). It again emphasizes the need for opposition to SJ Res 97 which proposes to raise the ceiling for ILO appropriations by the United States.

SOUTHWESTERN MEDICINE, April, 1956 issue carries a timely article on page 223. Authored by Charles E. Oswalt, Jr., MD, of Fort Stockton, Texas, it is entitled, "The Default of the Private Practice of Medicine Through Legislation." *YOUR BULLETIN* has been dedicated to bringing this to your attention throughout all issues. *YOUR FIRST DUTY* is to be INFORMED; THEN ACT against the menaces which endanger *YOUR* practice of medicine under the free enterprise system.

NATIONAL ILLNESS SURVEY — S 3076, HR 8913 (Bill to appropriate money for such survey)

From "Washington News," *Modern Medicine*, issue of April 15, 1956, we quote: . . . "For years the medical profession — particularly that branch devoted to public health — has been wandering aimlessly through a miscellaneous collection of data on illness, much of it unsound and more of it **limited significance**. . . . So, by now, any national projection on illness is generally regarded as **being worthless**." (emphasis ours)

In view of the reckless abandon with which "statistics" are being tossed around this week on the incidence of mental illness, it might be wise to pause and reflect!

Your Legislative Reporter quotes from a letter dated April 13, 1956 received from Earl S. Pollach, Chief, Hospital Reports and Records Unit, Current Reports Section, Biometric Branch, NATIONAL INSTITUTE ON HEALTH, as follows:

"We would like to point out that information as to the **actual incidence** of mental illness is not available." (emphasis added)

From the Dept. of Health Education and Welfare current reports, Mental Patient Data for fiscal year 1955 reprinted from Public Health Reports, March, 1956, it is hard to reconcile the 560,576 resident patients in mental hospital systems at the end of the fiscal year 1955 with the alleged 9 million suffering from mental and emotional disorders from the literature disseminated by the National Association for Mental Health, Inc. The difference between the National Association's 9 million and the reported patients in all mental hospitals in all states from the Public Health Reports of 560,576, at the end of 1955, makes one wonder where these "statistics" came from. Also from the same Public Health Reports as of March, 1956, we quote:

"There were **3.4** persons hospitalized, on the average, for each **1,000** estimated persons in the civilian population on any given day; this rate varied among the 48 states and the District of Columbia from a low of 1.5 to a high of 8.7. The median rate was 3.0." This makes the 1 in 16 ratio look rather ridiculous, doesn't it? Granted, the 1 in 16 ratio doesn't purport to be "all mentally ill and emotionally disturbed" in hospitals, but one wonders from what source this figure might have come. Are we to assume that there are 8,439,424 mentally ill at large, and if so, who counted them?

On the basis of this mysterious statistic, the National Association for Mental Health states: "At the present rate (?), one out of every 12 children born each year will need to go to a mental hospital sometime during his life because of **severe mental illness**." (emphasis added)

SOCIAL SECURITY ACTION is becoming Bone of Political Contention with Parties Split. Although the Senate Finance Committee has been marking time on HR 7225, politicians in general have been making Social Security hay in this election year. The administration is asking for retention of the status quo with respect to increases in SS tax rates and addition of new benefits, but they are eager to extend coverage because that means increased tax payments **at once** (but more claimants later!).

19TH EDITION AMA DIRECTORY

After 20 months of work, the 19th edition of the American Medical Directory has been completed, and the first copies will be shipped to subscribers during the last week of May.

The edition, the first since 1950, was originally scheduled for publication in 1952, but had to be postponed because the changeover during that period to a dues-paying membership structure in the A.M.A. made it impossible to obtain an accurate list of members of the Association. Work began on the new edition late in 1954, with the sending of information cards to physicians, and Editor Philip E. Mohr, of the A.M.A. Directory Department, says that "it was only with the cooperation of the medical profession and allied organizations that it was possible to bring the Directory up to date and produce a book of this scope."

The new edition contains 3,122 pages, and lists information on 240,638 physicians in the United States, its dependencies, and Canada. It also lists American graduates temporarily located in foreign countries. Since the 1950 Directory, more than 250,000 changes of address have been recorded in the files of the Directory-Biographical Department, 46,348 names have been added, and 24,255 have been deleted because of death, with an additional 1,172 deleted for other reasons.

The Pacific States, as in 1950, show the largest increase in physicians for 1956, with a gain of 23 per cent over the 1950 figures; the South Atlantic and Mountain States show gains of about 16 per cent, and the Central, Middle Atlantic and New England States show small gains. California leads in the number gained, with 20,763 physicians in 1956 as compared with 16,668 in 1950, a gain of 24.6 per cent. Florida, showing a gain of 49.8 per cent, now has 4,530 physicians as compared with 3,025 in 1950. Texas shows a gain of 1,026 physicians; Ohio a gain of 990; Michigan, 963; and New York, 934. Among the smaller states showing a substantial increase in the number of physicians are Arizona, New Mexico, Oregon and Utah. Slight losses in the number of physicians are indicated in Arkansas, Illinois, Iowa, Missouri, Vermont, and West Virginia.

Statistical information given in the Directory includes a table showing the number of physicians by states classified as to type of practice. The figures given indicate that 30 per

cent of the physicians in the United States are in general practice; 10 per cent give special attention to a specialty but do not limit their practice to it; 31 per cent limit their practice to a specialty; 11 per cent are serving internships or residencies, with an additional 6 per cent in other full-time hospital services; 5 per cent are retired or not in practice; 4 per cent are not in private practice and 3 per cent are temporarily in military service or serving in various government agencies.

The price of the Directory is \$30 a copy. Orders can be placed by writing to Philip E. Mohr, Editor of the Directory, American Medical Association, 535 North Dearborn Street, Chicago 10.



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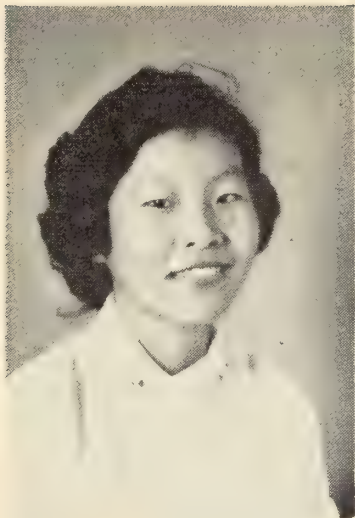
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Student Nurse Loan Fund Chairman
Phoenix, Arizona



TONIKO KAMAMURA

Toniko applied for a Loan this Spring. She was one of those qualifying for our loan. She will enroll in St. Joseph's School of Nursing this Fall. She writes that she believes firmly that it will be a great achievement to receive her R.N. After this, she hopes to work in a hospital for at least 3 years and then she would like to further her ambitions in more work in College.

OUR STUDENT Nurse Loan Fund is progressing! To date, we have provided loans for thirty nurses, and this Fall an additional three students will receive loans from the Auxiliary, enabling them also to establish nursing careers. In September 1956, when the new students have enrolled in nursing school, funds totalling \$9,500.00, will have been circulated and thirty-three girls will have been assisted by these funds. Each year a small portion of this money is returned to us in repayments of loans by our graduate nurses. This money then re-circulates to assist new students. In 1955, we were able to finance eight qualifying applicants for the loan. This is the greatest number of nurses to whom we have been able to grant loans.

The group pictures as shown, present the student nurses receiving the scholarship loan who are now in nursing school. However, owing to the fact that space is limited it is not possible to print a photograph of each of the graduate nurses. Two graduate nurses have been chosen to illustrate here the wonderful example of girl who has made use of the Fund, and the third picture introduces a student who will receive our scholarship loan in the Fall, when she enrolls in nursing school.



BELEN ALVIDREZ, R.N.

Belen graduated from Good Samaritan Hospital in 1955. She comes from Tucson. She wrote to say that she is doing general duty at the Pima County Hospital and attending night school at the University of Arizona. She hopes to be able to enter U.C.L.A. in the Fall where she wishes to obtain a degree in Nursing Education.



JOAN NASSER, R.N.

Joan graduated from St. Joseph's School of Nursing in 1954. She is a native of Miami. At this time she has a place in the Miami Inspiration Hospital, where she plans to remain for a few more months. After this, she plans to return to Nazareth Sanitarium, Albuquerque, for more experience in Psychiatric Nursing, or go back to College to work on a B.S. degree. She says at the moment she is "learning the ropes" in surgery so that she will be qualified to relieve and take call for the surgical nurse in Miami Inspirational Hospital.

GOOD SAMARITAN SCHOOL OF NURSING, PHOENIX, ARIZONA



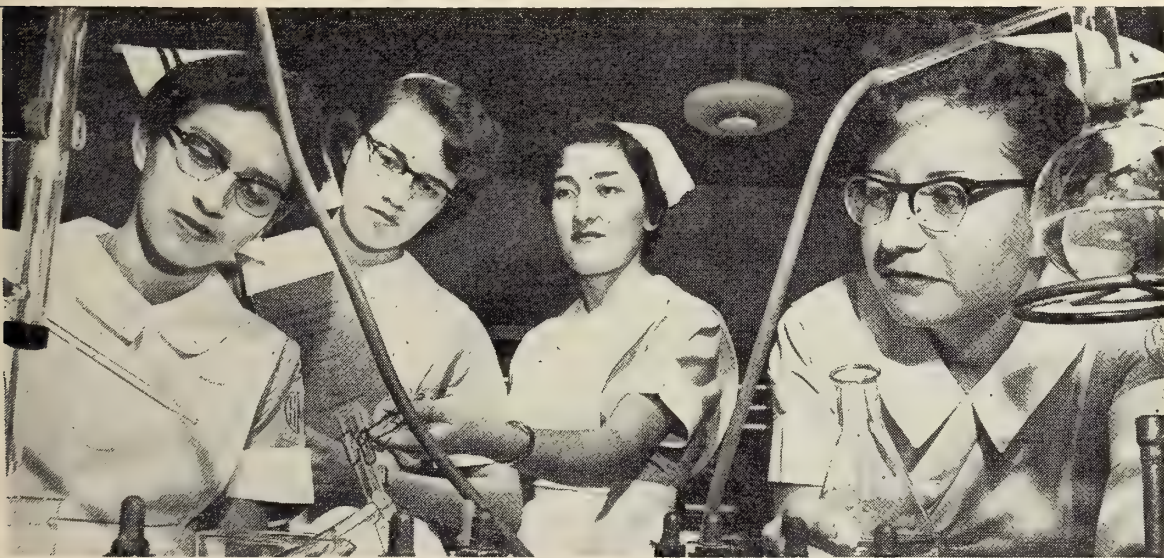
L. to R.; Back Row: Miss Rosalea Kirts, Tucson; Miss Louise Devoley, Phoenix; Miss Virginia Gallardo, Tucson; Miss Nancy Wilcox, Sr. Yr., Tucson; L. to R.; Front Row: Miss Beverly Wilson, Phoenix; Miss Edna Niccum, Glendale; Miss Peggy Nunnally, Chandler; Miss Eleanor Garcia, Sr. Yr., Prescott. The Director of Good Samaritan Nursing Education, Mrs. Boan, tells us that all these students are well adapted to their career and that an overall high standard has been maintained by each one.

ST. JOSEPH'S SCHOOL OF NURSING, PHOENIX, ARIZONA



L. to R.: Miss Lois Ann Enos, Laveen; Miss Mary Louise Jaquez, Clifton; Miss Myra Higgins, Prescott; Miss Lydia Zun'ga, Miami; Miss Barbara Bieger, Phoenix was not able to be present for this picture. Sister Mary Christine reports that these students are progressing exceptionally well. Each girl expresses tremendous ambition in her future career as a registered nurse. The girls are shown standing around the model for the new nurses quarters to be built for St. Joseph's Hospital in the near future.

ST. MARY'S SCHOOL OF NURSING, TUCSON, ARIZONA



L. to R.: Miss Sylvia Espinoza, Nogales; Miss Hannah Eckstrom, freshman, Tucson; Miss Frances Zappia, Clifton; Miss Cecilia Fuentes, Sr., Douglas. Sister Helen Frances, Director of Nurses, tells us that these girls are interested and enthusiastic about their work and above average students.



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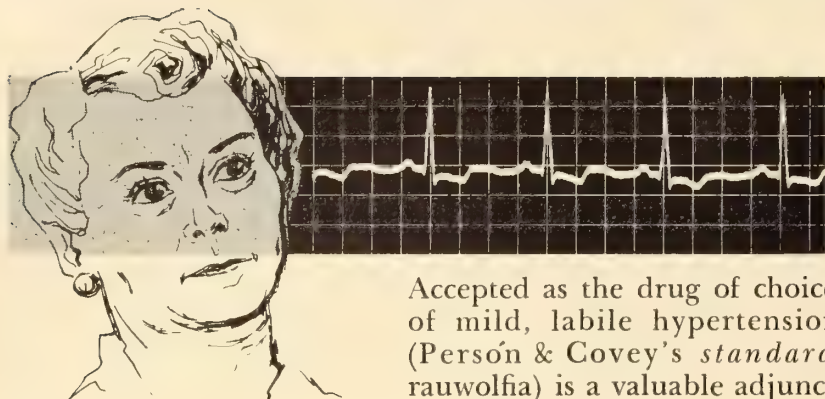
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¹ The New England Journal of Medicine 253:395, September, 1955.

² American Journal of Medical Science 229:379, April, 1955.

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ARIZONA MEDICINE

Journal of ARIZONA MEDICAL ASSOCIATION

VOL. 13, NO. 7



JULY, 1956

TABLE OF CONTENTS

| | |
|----------------------------|-----|
| INDEX TO ADVERTISERS | 35A |
|----------------------------|-----|

ORIGINAL ARTICLES

| | |
|--|-----|
| AGING LUNGS | 261 |
| W. H. Oatway, Jr., M.D., Altadena, California | |
| CEREBRO-VASCULAR DISEASES | 265 |
| Chas. A. L. Stephens, Jr., M.D., Tucson, Arizona | |
| THE MEDICAL MANAGEMENT OF THE ACUTE CARDIAC EMERGENCIES | 273 |
| Hyman Fisher, M.D., Tucson, Arizona | |

MEDICAL PROBLEMS

| | |
|---|-----|
| PHOENIX CLINICAL CLUB | 277 |
| Joseph M. Greer, M.D., Phoenix, Arizona | |

EDITORIAL

| | |
|--|-----|
| JOINT COMMISSION ON ACCREDITATION OF HOSPITALS | 288 |
|--|-----|

TOPICS OF INTEREST

| | |
|---|-----|
| REPORT OF THE DELEGATES | 289 |
| Jesse D. Hamer, M.D., Phoenix, Arizona | |
| BOARD OF MEDICAL EXAMINERS — STATE OF ARIZONA | 296 |
| ORGANIZATION PAGE — Civics | 298 |
| Norman A. Ross, M.D. | |

WOMAN'S AUXILIARY

| | |
|--|-----|
| WOMEN'S AUXILIARY TO THE ARIZONA STATE MEDICAL ASSOCIATION | 300 |
| Mrs. Roy Hewitt, Tucson, Arizona | |

DIRECTORY

| | |
|----------------------------|-----|
| LABORATORIES | 32A |
| DRUGGISTS DIRECTORY | 33A |
| SANATORIUM DIRECTORY | 34A |
| PHYSICIANS DIRECTORY | 36A |

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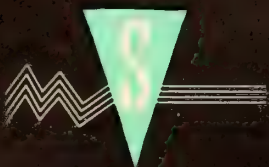
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1. Fazekas, J.F., et al.: J.A.M.A. 161:46 (May 5) 1956. 2. Mitchell, E.H.: J.A.M.A. 161:44 (May 5) 1956.

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ARIZONA MEDICINE

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VOL. 13, NO. 7



JULY, 1956

Original ARTICLES

AGING LUNGS

By. W. H. Oatway Jr., M.D.

La Vina Sanatorium

Altdaena, California

LUNGS BEGIN to age chronologically at birth, and the anatomy and physiology change at an uneven rate from then on.

Actually the potential for change is present before birth. We are not born equal, since the modifications of heredity leave some people less 'equal' than others. They are then prone to the ills and weaknesses of their forebears, or the influence of longevity.

The chance which dictates color of skin, sex, place of birth, and even family type and occupation thus dictates many extrinsic factors which can influence aging of the lungs.

During life we then proceed to mistreat our lungs in a variety of ways — for pleasure, by occupation, or for sport. They have a great resilience and reserve, however, and are able for a long time to fight off most abuse and neglect. . . . Medical science, if given a chance, is able to protect and rejuvenate them somewhat against travail and time, using antibiotics, chemicals, hormones, machines, gases, surgery, etc.

I intend to review some of the things which should be known about the lungs and aging. This is partly for a selfish purpose, so that I may refurbish my own concept of the subject. . . . I do not intend to begin with the infant and work on thru life, but to consider lungs which have had the use of years, and are showing the signs of wear. I will include the premature aging which can occur between 40 and 60 years, and carry on thru the 'struld-

brugs' of Gulliver's Travels, with their advanced and once hopeless senility. We might even help the struldbrugs these days.

The changing life expectancy figures, which are so very important in Arizona and Florida and parts of California, should be mentioned. The number of oldsters is increasing. Males are living beyond 65 years, and females beyond 70. . . . There are 12 million people over 65 years of age, which is twice the number of 1930, and 4 times that of 1900. It is 8 per cent of the total population. . . . Disability is 3 times as common between 65 and 75 as at 40 years. Hospital utilization is 4 times as common by retired as by active employees. . . . The life expectancy may rise further, and the population is increasing at the rate of 3 million per year. It is certain that more lungs will grow older, and that more lungs will contain the changes of age and the diseases which occur or accumulate during later life.

The aging of lungs can only be defined by considering changes in anatomy and physiology, due to chronology, infection, occupation, accidents, allergy, and the aging of nerves, circulation, and glands of internal secretion.

Stieglitz says that the **progressive changes of age** include —

1. A gradual tissue dessication.
2. A gradual retardation of cell division, capacity of cell growth, tissue repair, and a reduced antibody formation.
3. A cellular atrophy, degeneration, fatty infiltration, and tissue pigmentation.

Reported to the Arizona Medical Association, Inc., Thurs., May 5, 1955, 4 P.M.

4. A gradual decrease and degeneration of elastic connective tissue.

Examination of the aging lungs must be done in the same way as for any age group, but more emphasis must be placed on objective findings, and the possibilities of the person's age must be used in interpretation. . . . Symptoms and physical signs, both localizing and constitutional, should be obtained. . . . X-rays should always be obtained, remembering that indifference, forgetfulness, emphysema, etc., may minimize complaints and physical findings. It should also be remembered that certain changes take place in the lungs and chest cage from the age of 30 to 70 years. . . . Simple lung function studies may be of value when indicated, and vital capacity, timed vital capacity, and maximum breathing capacity are usually sufficient. Gas exchange studies are in the province of special laboratories. (Dr. Reginald Smart spoke here this winter, and several Arizonans attended a lung function symposium in Los Angeles in February, so I know there is an interest.)

Acute diseases of the lungs include the pneumonias, flareups of chronic infections, vascular accidents, and bronchial lesions. . . . **Pneumonias** have changed in type at all ages in the past ten years. Pneumococcal infections once dominated the incidence compared with other bacteria and viruses; now the situation is reversed. . . . Pneumonia was once called the "friend of the aged" because of its peacefulness. It is quite often bronchial; it may be called atypical, senile, asthenic, hypostatic, etc.; it may mask neoplasms and heart failure; it may accompany arterio-sclerosis, diabetes, bronchitis, and emphysema. Reinmann says that "Enfeeblement and atrophy of tissues is usually accompanied by a decreased ability to react against microbic invaders." . . . The more sluggish reflexes and atrophy of the bronchial elasticity and cilia reduce the barrier to infection and the power to expell secretions. Resistance to certain bacteria decreases with age. . . . The incidence of lobar pneumonia is relatively high in old age, and the mortality is directly proportional to age. Friedlander's, Pfeiffers, diphtheria, coli, and other organisms should be looked for as the cause of unusual pneumonia. . . . The antibiotics have changed the entire picture in the past 10 years. They prevent, abort, or cure the former hopeless

lesions, and keep people alive to greater ages. The question of a 'passive' euthanasia must be faced or evaded when the basic condition is hopeless and the treatment drastic.

Acute embolus and infection occur more often in lungs of older people. The obese, the cardiovasculars, and the post-ops are susceptible, and 85% occur in patients over 40. More than 85% come from thrombi in the legs. The prevention and management are improved and well-known.

The **chronic lesions** of older lungs include changes which occur as a result of **cardiac and vascular disease; fibrotic lesions, neoplasms, degenerative diseases, and chronic infections of the lungs and bronchi.** Each of these categories could require a full-size lecture, so I will scan only the points of recent interest.

The effects of **cardiac disease** are chiefly those of chronic and acute passive congestion. C.P.C. is caused by the late results of rheumatic valvular disease and the increasing defects from arteriosclerosis. They affect respiration by impairing the ventilatory efficiency and the gas exchange, and also produce breathing abnormalities thru the central control mechanism.

Vascular aging in the lungs occurs, but will be discussed with emphysema. Selective vascular lesions are rare. The stenosis of halophagia and arterio-venous aneurysms are not a special accompaniment of aging. I have recently seen a mysterious fine patchy lesion of one lobe, in a man of 93, rapidly involve both lungs and end fatally.

Fibrotic lesions increase with age. They logically should be due to tissue hypoxia or inflammation. They may be localized or diffuse, and either pleural, peribronchial, interstitial, or alveolar in distribution. It helps to think in these terms, but it is not always possible to make a diagnosis. . . . The cases of fibrosis with obvious cause mostly occur with chronic degenerations and infections; the obscure cases fall into a separate group. . . . **Radiation fibrosis** occurs in the age beyond 40 only because the procedure is used for the internal and external neoplasms of that period. Better focusing, plus the rotation method of Dr. Hugh Hare, has reduced its occurrence. . . . The fashionable **chronic 'intestitial' 'cholesterol' pneumonitis** may occur by chance in older lungs and it has no specific cause. Its similarity to cancer and infections may cause uncertainty and excision. . . . The elderly in smoky cities may de-

velop **fibro-anthraxis**. Its scarring is minimal, it does not predispose to other diseases, and it is of no clinical importance. An industrial history is of help in finding or identifying fibrosis from 'dust' diseases, including the inert and mild pneumoconiosis from iron and carbon; the reactive and possibly allergic reaction to sugar cane and cotton; and the lesions from silica, asbestos, talc, diatomaceous earth, and beryllium. . . . The Hamman-Rich syndrome is serious, more progressive, and at present seems to be an entity. . . . Atelectasis should make one suspicious of Ca. rather than simple fibrosis.

Neoplasms of the lung are sometimes correlated with advancing age. The lesions of lymphomata, which are next most common, are not. The occurrence of metastases from other organs depends on the source, with the stomach, prostate, kidney, adrenal, and ovary contributing in that order. . . . Bronchogenic carcinoma is correlated with age, and the incidence is increasing in the older age groups. It is 25 times more common in U. S. and European males than it was 35 years ago, and its greatest frequency (37%) is in the 6th decade, an earlier peak than in the past, and one of the few conditions in which such a rise occurs. . . . Dr. Alton Ochsner, known to many of you because of his visits here, feels that there is an undeniable parallel with excessive smoking. Cigarettes contain a carcinogen. Metaplasia does occur in the bronchi of smokers. Viral pneumonia is not the same as 'atypical,' which can be carcinoma. The chances for a male over 40 to have Ca. is greater than to have viral pneumonia. Eighty per cent of carcinomas can be diagnosed pre-op. Cell studies of bronchial secretions are an added help to other technics. A recent series of 300 cases of pleural effusion in older patients was found to have Ca. in 66%. . . . Operability, resectability, morbidity, mortality, and end-results are nearly the same at 65 to 75 years as at earlier ages, but none of the figures are good. . . . Lobectomy may be the way to reduce operative hazards for isolated, smaller (and thus earlier) lesions in the older patient. . . . The only chance to improve the statistics is early diagnosis. Men who have been heavy smokers for years should have a closely-read x-ray every 6 months. . . . Dr. Ochsner (with a straight face) has noted that cancer takes an increasing number of smok-

ers by 55, tho some are 'saved' by having coronaries (from the same cause) at 45. He suggests that smokers may avoid both by shooting themselves at 40.

The regenerative diseases are the greatest clinical problem, and pathological puzzle. I do not know of anyone who has had the complete insight to catalogue them, and the literature is confusing; there are ten names used for one variety of emphysema. . . . Miller voices the most hopeless feeling when he says that the cause of progressive emphysema is uncertain, all varieties increase with age, and care is difficult. I also am depressed by the notable difficulty in explaining the condition to the patient and family. . . . Emphysema is important to the G.P. because most people over 65 live at home instead of in institutions. Considering the pathogenesis more people are reaching the age of clinical symptoms, will be diagnosed, and will need therapy. There are a dozen major methods of therapy. . . . **Obstructive, hypertrophic emphysema** develops thru the years. Banyai believes that infections cause a degeneration of elastic fibres, a partial check-valve in the bronchioles (often with muscle spasm), and the pressures in the lung are elevated from "a lifetime of coughing." The effects on chest size and mobility, gas transfer, etc., are well known. . . . **Non-obstructive, atrophic, senile emphysema** is generally considered to be a usual process of aging, an involutional defect which increases at 60, is constant at 80. The chest is not large, the alveoli are flabby and collapsable, the air is not trapped, bronchospasm is rare, and there is not much functional impairment. . . . Crenshaw of Oakland has recently stressed his belief that non-obstructive emphysema is a hypertrophic condition, with bulla-formation, and 'cotton-candy' or 'vanishing' areas. This is due to degeneration from an obliteration of the bronchial and pulmonary arterioles. He removes the useless, air-robbing segments. Early diagnosis is helpful. Symptoms, physical exams, PA and lateral x-rays, bronchograms, and observation can usually label the condition.

Pulmonary cysts may be present in aging lungs both coincidentally (if congenital, bronchiectatic, or pneumatocoles), and because of the changes in a complicated emphysema. The latter is the more common. . . . Korol has reported an interesting angle in his 400 cases

of advanced emphysema, — The 40 congenital cystic cases produced 7 cases of bronchogenic Ca. in 10 years, while 60 cases of bullous emphysema had no carcinoma.

Chronic infections of the lungs pile up during the years, and can be bothersome, serious, or fatal. . . . Chronic bronchitis can flare into pneumonia, obstruct into emphysema, and be associated with every lesion of the lungs. The older the patient the more serious its implications. It produces a non-specific restrictive fibrosis as time passes. It is most serious in the debilitated. Prevention of progress is probably easier than eliminating the cause. . . . A recent article on 'Tobacco Bronchitis' surveyed 4,300 cases. Seven to 19% of non-smoking children and adults had bronchitis; 76 to 80% of smokers had bronchitis. Inhalation of cigarettes was the cause, and it often decreased after the age of 50.

Suppurative pneumonia and abscess are usually the result of aspiration, and may occur in the aged. **Bronchiectasis** probably persists from repeated bronchial infections in childhood, with few symptoms for years, and then recurring infections, ill health, and frequent hemoptyses in later years.

Mycotic (fungus) infections are more common in older lungs, but chiefly as residuals. At that stage the coincident fibrosis and emphysema can be embarrassing. Old lungs may acquire new fungus infections, but they are not as specifically serious from dissemination as was once thought.

Tuberculosis is now predominantly a disease of middle and older age. More cases now exist at those ages. More older cases are being found, with 50% of the new cases in New York being over 45 years of age. The average age of patients admitted to sanatoria (as shown by Paulsen in ARIZONA MEDICINE) is rising; 12% of the patients admitted to Los Angeles' Olive View San. in 1940 were over 40, but last year 55% were beyond that age; and more cases will survive as more are being salvaged by therapy. . . . The median age of death from TB in 1924 was 33 years, and it is now over 50. The highest point of the present mortality rate is in males from 55 to 60 years. . . . Waring, and Smith, believe that the seed-bed of future TB cases is the unrecognized tuberculous male over 40, and woman

over 60. . . . They are hard to find on a voluntary basis, tho. Only 16% of people over 65 were x-rayed in a recent Florida survey. They rarely will come to be x-rayed in elderly Pasadena. There should be a bounty paid for x-rays on each person over 65. . . . It is by far the worst disease of old age, since it is not only personally serious, but an infectious hazard. Patients who are infectious should be treated with modified rest, PAS and isoniazid, and, if they continue infectious should be candidates for surgery. 75% of older patients with active TB will be dead in 5 years if untreated. This active therapy is more logical because, as Dr. Howson says, persons over 60 can't be trained in precautions.

The aging lung may sometimes be rejuvenated, or prevented from growing older, whether the change be local or generalized. . . . Resectional surgery may halt various types of destruction, and several reports indicate that operations should be done if the need is great, the condition good, and in spite of the age — actually in spite of coronary disease which does not quite double the usual hazard of 3 to 4 per cent. . . . Intermittent positive pressure breathing, plus bronchodilators and wetting-agents, may help the bronchospasm and infection of chronic emphysema in 80% or more of a series averaging 57 years of age. . . . Breathing exercises may be an adjunct of some value in giving diaphragm control and completing the expiratory phase. . . . Pneumoperitoneum may help some patients with low diaphragms. . . . Drugs which dilate the bronchioles and small arteries may give temporary relief and sometimes control of a chronic situation. . . . Antibacterial drugs can work miracles if well chosen, alternated, and wisely used, but the patient **must** be kept under observation. I say 'antibacterial,' since the sulfa drugs are useful as well as the antibiotics. Sadly, stilbamidine for blastomycosis is the only successful drug for fungus diseases and most virus infections. . . . Diamox is said to be useful for congestive lung diseases, with or without emphysema, but is toxic. . . . The adrenal corticoid drugs may be wonderful for the bronchospasm of asthma, emphysema, and certain fibrosing lesions. I believe that we must learn to **control** and **continue** steroid usage for best effect. . . . It is possible that the new 1 to 20 estrogen-androgen ratio may help the pulmonary as well as the general

condition of both men and women over 60 years. . . . Climate has a legitimate field in therapy of aging people and aging lungs. They may live more comfortably in a dry subtropical climate, with less hazard of 'strep' and other infections, and with the assurance of good

care. I suspect that there are more unpublicized experts in geriatrics (or gerontology) in southern Arizona than in all the specialty journals. . . . I apologize to you, therefor, if I have been redundant in this tour of the subject, but it has been a pleasant trip for me. Thank you.

CEREBRO-VASCULAR DISEASES

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CEREBRO-VASCULAR diseases have for generations presented the physician with an almost insoluble therapeutic problem, a mysterious etiology and a nonpredictable course. Unfortunate victims of "strokes" or "apoplexy" have in the past been relegated to the remote corners of the wards or tucked away in nursing homes or institutions to vegetate their few remaining years, removed from their families, in sombre surroundings, alone, helpless, often dumb, and without hope.

This unhappy state of affairs has come as a stepchild of ignorance and of economic necessity. There are few physicians that have not stood by helplessly and watched "poor John" suffer another "stroke" and seen the family savings gradually disappear down the costly drain of domiciliary care.

The real magnitude of the problem of cerebro-vascular diseases has recently been revealed by a survey conducted by the American Heart Association and sponsored by the Lasker Foundation.⁽¹⁾ In 1952, 170,000 persons died of vascular diseases affecting the cerebro-vascular system — three times the number of deaths due to tuberculosis and diabetes combined! Seventy-three per cent of these deaths occurred in persons 65 or older. But looking at it another way: 27% occurred in the highly productive years, under 65, i.e. 44,000 deaths from cerebro-vascular diseases in 1952 were in the working age group of 24 to 65 years. If these had lived even an additional one healthy year they could have earned an average of 151 million dollars and paid the Federal Government 18½ million dollars in taxes! The cost of 60,000 victims of cerebro-vascular diseases in state mental hospitals was, in 1952, 46½ millions; the average length of stay of these patients was four years.

It is estimated that in 1955 there were

1,800,000 victims of a cerebro-vascular disease in the U.S.A.

In St. Mary's Hospital, Tucson, Arizona, in 1955, there were 189 admissions for cerebro-vascular diseases, with an average over-all mortality rate of 50%.

The problem, then, of cerebro-vascular diseases in this country and in this city and to ourselves and the people we care for and assume responsibility for, is a great one — great in numbers and great in cost to us all.

It is the purpose of this paper to define this common problem, to review that which we know and do not know, and to cite some personal experiences in the diagnosis and treatment of cerebro-vascular diseases.

TEMINOLOGY

While it is possible to dismiss the whole matter with the vague and all inclusive off-hand diagnosis of "C.V.A.," it is essential that we agree on more specific terms, so that we may find a common basis for communication and the accurate interchange of knowledge.

In a search of the literature (1-20) and in reviewing reports at one of our local hospitals, a variety of terms have appeared. Unfortunately, to all men these words do not have the same meaning. The following is a list of diagnoses used:

- stroke
- apoplexy
- a stroke of apoplexy
- shock
- ictus
- hemiplegia
- senile stroke
- softening of the brain
- subarachnoid hemorrhage
- anemic infarct
- cerebral arteriosclerosis
- cerebral ischemia

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cerebral thrombosis
 cerebral hemorrhage
 cerebral embolus
 "C.V.A."
 focal cerebral infarction
 hemorrhagic infarct of the brain
 cerebral spasm
 cerebral spasm
 hypertensive encephalopathy
 encephalomalacia

It is obvious that many of these terms are non-specific, redundant and misleading. It would seem appropriate for the Committee on Cerebro-vascular Diseases of the American Heart Association to agree on a definition of terms and recently a subcommittee for this purpose has been created.

PATHOLOGY

The anatomy and physiology of the brain and its blood supply is in many ways unique.(2) The cerebral tissue has an RQ of 1, signifying an exclusive use of glucose for energy. In fact, the brain uses over ten times the amount of glucose per gram than any other tissue in the body. Therefore, when there is circulatory arrest, even briefly, irreversible damage may result.

The brain uses 20% of the total oxygen requirement of the body and respiratory arrest may be as hazardous for the brain as circulatory arrest.

The vascular bed of the brain is rich and multiple but unfortunately effective channels of collateral circulation do not exist* between the various terminal arterial branches supplying the brain. When one appreciates that the brain is highly organized and segregated as to function, it is not difficult to understand how a small but appropriately placed infarct may lead to severe disability or death.

The blood vessels of the brain are subject to the same defects and diseases seen elsewhere in the body, and which may result in infarctions:

ARTERITIS may result from collagen disease, such as lupus erythematosus disseminatus, periarteritis nodosa, polyarteritis; from Buerger's disease; from rheumatic fever; from diabetic or hypertensive arteritis or arteriolitis; syphilis; from mycotic aneurysms, sepsis, trauma, eclampsia.

(*There are collaterals which can take over when occlusion of a vessel is slow,—viz. slow occlusion of a middle cerebral artery may not result in infarct but sudden occlusion does.)

EMBOLI may arise from the heart or from the pulmonary veins. In the heart, rheumatic heart disease with auricular fibrillation or arteriosclerotic heart disease with auricular fibrillation, myocardial infarct with mural thrombi or SBE, may fracture thrombi and lead to embolization and infarction of the brain.

ANEURYSM may be congenital in origin or acquired as a result of arteriosclerosis or hypertension. Their common location at points of 180° angulation implies aneurysmal dilation from a resultant of pressure forces.

ARTERIOSCLEROTIC BRAIN DISEASE may lead to thrombosis in situ in a large vessel with a corresponding large anemic infarct or multiple small vessels may thrombose leaving a pattern of small areas of focal necrosis.(3)

A recent important addition to our understanding of arteriosclerotic brain disease is the concept of **cerebral insufficiency** which corresponds to the older, firmly established coronary insufficiency. There is evidence to support the theory that a patient with cerebral arteriosclerosis may develop in devious ways a cerebral hypotension; this in turn fails to supply sufficient blood to portions of the brain already at a critical level of blood flow and infarct may result.

HYPERTENSIVE ENCEPHALOPATHY with necrotizing arteriolitis and spasm remains something of an enigma. There is still no general agreement concerning the existence of pure cerebral arterial spasm — some maintain that spasm of the cerebral vessels does occur but only around a small thrombosed artery as the initiating insult. Others deny this and feel that malignant(4) hypertension can originate the arterial spasm.

BRAIN HEMORRHAGE at the autopsy table may be seen to arise from arteriosclerosis, malignant hypertension, vascular malformations, or hemorrhagic diatheses (i.e. thrombocytopenia leukemia, etc.) Dr. R. D. Adams of Harvard Medical School (3) states that in his material, "Almost all cases of brain hemorrhage are fatal. We rarely see an old hemorrhage in the brain; whereas, countless old softenings are encountered. Nearly all of the patients were hypertensives and the retinal and brain lesions nearly always parallel each other." Dr. Zimmerman(5) of New Haven Hospital, found 182 patients with cerebral-vascular disease out of 4,240 consecutive; from his examination he agrees that

about 80% of those with brain hemorrhage are hypertensives and it is his belief that the hemorrhage is almost always due to dissecting aneurysm of the fusiform type (Charcot-Bouchard aneurysm). Blood dissects beneath an arteriosclerotic plaque and rupture follows. Dr. Sheinker of Cincinnati General Hospital (6) studied 300 massive cerebral hemorrhages and found 65% in the basal ganglia; 15% in the white matter; 20% in various other areas.

HEMORRHAGIC INFARCT is regarded by most pathologists as a separate entity, the final termination of a series of events. First, there occurs an anemic infarct following arterial occlusion or insufficiency. In sequence the adjacent ischemic tissue becomes necrotic and vessels rupture and bleed.

Disturbing to the pathologist is the disproportion sometimes found between minimal findings at post mortem and the extensive clinical findings described on the patient's record. Unfortunately the pathologist cannot measure and appreciate the critical factors of cerebral blood flow, and other physiological dynamic measurements only present in the living patient.

DIAGNOSIS

HISTORY: It has long been said that "The patient with cerebro-vascular disease usually will not have premonitory symptoms. Rarely will the patient complain of vertigo, weakness, transient weakness of an extremely, ophthalmopelgia, headache, nausea and vomiting. The usual onset is sudden and without warning."(9) As we have become more alert to the subtleties of cerebro-vascular diseases, this no longer applies.

An example is the history of "The Little Strokes" so often and vividly described by Dr. Walter Alvarez.(18) These patients may have brief "black-outs," dizziness or weakness, transient confusion or aphasia, brief episodes of ataxia and gradual personality changes of a permanent nature. Recent studies(15) by Siekert and Millikan of Rochester, Minnesota, lay particular emphasis on the history of recurrent episodes of aphasia, numbness and tingling and weakness of the right arm, due to intermittent insufficiency or thrombosis within the basilar artery system, or intermittent hemiparesis, sensory defects and aphasia due to intermittent insufficiency or thrombosis of the internal carotid artery. C. J. Wood (16) and others (17) have pointed out the episodic history of re-

peated cerebral emboli from rheumatic heart disease or arteriosclerotic heart disease with auricular fibrillation and intra-auricular thrombi.

General symptoms of cerebro-vascular diseases commonly encountered are headache, nausea and vomiting and coma. Coma is much more common with cerebral hemorrhage.

In Dr. Merritt's series at Columbia University, New York,(7) the following incidence of symptoms were found:

| Symptoms | Cereb. Hem. | Cereb. Thr. | Cereb Emb. | Subarach. Hem. |
|-------------|-------------|-------------|------------|----------------|
| Headache | 63% | 6% | 25% | |
| Vomiting | 51% | 6% | 25% | 50% |
| Convulsions | 15% | 7% | 9% | 15% |
| Coma | 51% | 33% | 25% | 30% |

Hemorrhage usually causes a much greater disruption of brain function. Findings such as paralysis of conjugate deviation, bilateral Babinski and a severer degree of coma are more common with hemorrhage than with anemic infarct.

Diganosis is related to age as may be seen in the following table taken from Merritt.(7)

| Age | Cereb. Hem. | Cereb. Thr. | Cereb. Emb. | Subarach. Hem. |
|----------|-------------|-------------|-------------|----------------|
| Under 20 | 1 | 0 | 9 | 11 |
| 20-40 | 3 | 1 | 23 | 36 |
| 40-60 | 48 | 31 | 41 | 38 |
| 60-80 | 46 | 61 | 22 | 14 |
| Over 80 | 2 | 7 | 5 | 1 |

Therefore, if one has a patient whose age is under 40, cerebral embolus or subarachnoid hemorrhage becomes a more likely diagnosis.

PHYSICAL EXAMINATION: Examination of a patient with cerebro-vascular disease should be as complete as circumstances will permit. One should recall that the cerebral circulation may be impaired due to extracerebral factors.(9) The first sign of a myocardial infarct may be hemiplegia. 4.9% to 29% of patients with coronaries were found to have paralytic strokes by Dozzi.(10) Rogers(11) found in a review of 134 cases of cerebro-vascular disease that these two conditions coexisted in 19 patients (7%). Infarct, cardiac arrhythmias or heart failure, may lead to intracardiac thrombi with cerebral embolization, or to hypotension, and a lowered cerebral pressure with resulting cerebral thrombosis or insufficiency. Therefore, careful examination of the heart, including an electrocardiogram should be performed on all victims of cerebro-vascular disease.

The carotid sinus reflex should be tested routinely in these patients. Some will be found to have increased sensitivity because of cerebral arteriosclerosis or because of previous heart damage, and the cardiac arrest and lowered cerebral pressure will cause cerebral infarc-

tion. The same may be said of other hypotensive stimuli, such as shock, ganglionic blocking agents, vasodilators, postural hypotension, anemia. The patient's blood pressure should be taken, when possible, both recumbent and standing. Those with postural hypotension and cerebral arteriosclerosis are prime candidates for cerebral infarcts.

Palpation of the internal carotid artery through pharynx, as described by Dunning,(12) may be of great value in establishing the diagnosis of thrombosis of the internal carotid artery. This procedure assumes greater importance when it is realized that hemiplegia, sensory defects and aphasia, commonly described as due to thrombosis of the lenticulostriate artery in the dominant hemisphere, is due to thrombosis of the internal carotid artery if more than the hemiplegia persists.(9)

Skull films may show a calcific internal carotid artery within the cavernous sinus and angiography may reveal the location and extent of the vascular lesion.

Spinal tap should be performed routinely, but with caution. 85% of patients with cerebral hemorrhage will have blood in the spinal fluid, a rare finding in cerebral thrombosis.(14)

The electroencephalogram may be of aid. Schwab(13) found that 40% of all patients with cerebro-vascular diseases have abnormal electro-

encephalograms or pneumoencephalograms. Although this is less help than you would get if you tossed a coin, serial encephalograms will often aid in differentiating cerebro-vascular disease from tumor.

The search for other manifestations of thrombo-embolism should be diligently carried out. McDevitt(14) reports 98 patients coming to necropsy with a diagnosis of cerebral hemorrhage, cerebral thrombosis or cerebral embolism. Forty-eight had anemic infarcts of the brain and 23 of these exhibited evidence of 50 major thromboembolic complications occurring other than in the brain. Of 525 autopsies performed routinely by Adams(3) in a neuropsychiatric institution, 4% of all organic brain diseases were associated with recurrent cerebral embolism. Of 6,285 unselected autopsies performed by Garvin(18) 4.2% had mural thrombi in the heart. In 771 autopsies on adults who died of hypertensive heart disease intracardiac thrombi were present in 34.4%. Therefore, many of our patients with cerebro-vascular disease will have evidence of thromboembolism elsewhere. If we search for and find these clues our diagnosis becomes more specific.

The differential diagnostic criteria between the three most common types of cerebro-vascular diseases are listed in the following chart from Wright, McDevitt & Foley:(19)

| ONSET | CEREBRAL HEMORRHAGE Severe headache, nausea & vomiting, coma | CEREBRAL THROMBOSIS Weakness of arm/leg, Difficulty speaking Gradual or sudden | CEREBRAL EMBOLISM Very sudden-abrupt development of neurological signs |
|---|---|---|---|
| Convulsions | 14% | 7% | May occur |
| Coma | If coma persists more than 24 hrs. hemorrhage more likely | Usually less than 24 hrs. Often not at all | Not usual unless embolus is large |
| Vomiting | 51% | 6% | 25% |
| Incidence | 15% | 82% | 3% (or more) |
| Age groups | Elderly | Elderly | Younger |
| General physical exam. | Evidence of arteriosclerosis Hypertension | Same More likely if B.P. normal | Rheumatic heart disease, auricular fibrillation due to arrhythmia, Myocard. infarct, Evidence of emboli elsewhere |
| Cheyne-Stokes' | Common | Seldom | Rare |
| Coniugate deviation of eyes | Frequent | Seldom | Rare |
| Stiff neck | Frequent | Rare | Rare |
| Quadriplegia | Rare | Rare except in thrombosis of basilar art. | Rare |
| Babinski bilat. | Frequent | Rare | Rare |
| Leucocytosis | More than 50% have over 12,000 | Uncommon | Uncommon, unless embolus is infected |
| Cerebrospinal Fluid Color Pressure Cells Pr | Bloody or xanthochromic Up R.B.C.—crenated Up | Clear Normal or under 250mm. H2O Slight pleocytosis Normal to slight | Clear, or slightly xanthochromic Normal Normal to moderate pleocytosis Normal to slight |
| Mortality | 90% | 60% | 50% |

TREATMENT

Brain hemorrhage presents a therapeutic problem that is almost insurmountable. Fisher(20) states, "The treatment of hemorrhage is hopeless. Nine out of ten die." Bucy(21) agrees that hemorrhage is usually too rapidly fatal or too extensive and of those who do survive the first insult 50% will die in the first year. He believes surgical intervention offers the greatest hope for the patient and finds cerebral aneurysm with rupture most amenable to surgery. Evacuation of subdural or epidural hematoma may be life saving, and when hemorrhage is in an inaccessible place ligation of the common carotid artery may salvage an otherwise hopeless patient.

Cerebral thrombosis or embolus, or arterial insufficiency is more amenable to treatment. A wide variety of cerebral vasodilators are in use today. Kety(22) has evaluated many of these. His findings are based on measurements of cerebral blood flow utilizing nitrous oxide and arterial-venous oxygen differences in normal subjects and in patients with hypertension, arteriosclerosis or Parkinsonism.

He has found **stellate ganglion block** exerts little or no influence on the cerebral circulation. Millikan(24) found no change in the natural course after stellate ganglion block.

Chemical and hormonal influences are of the greatest import on the cerebral circulation, i.e. CO_2 .

Hyperventilation will produce a 35% reduction in cerebral blood flow and inhalation of 5 to 7% CO_2 will increase cerebral blood flow by 75%. Fazekas and his associates (23) agree and state, " CO_2 (5%) inhalation seems to be the most efficacious agent available for increasing quantitatively the rate of cerebral blood flow by reduction of cerebro-vascular resistance."

Aminophyllin intravenously decreased the cerebral blood from an initial level of 59 to 44 ml/100 gm/min. Therefore, aminophyllin is mildly vasoconstrictive in the brain. Caffeine exerts an almost identical effect.

Noradrenalin raised the blood pressure 29% but decreased cerebral blood flow by 9%.

Epinephrin raised blood pressure 20% and increased cerebral blood flow 20% and there occurred a 22% increase in O_2 consumption.

Nicotinic acid and alcohol did not influence

cerebral flow even through flushing of the face occurred.

Papaverine increased cerebral blood flow 20%.

Histamine dilates the cerebral blood vessels but this desired effect is annulled by the associated drop in systemic blood pressure.

Oxygen constricts the cerebral vessels and decreases cerebral blood flow by 13%.

Cerebral stimulants and depressants have almost nothing but harm to offer the victim of cerebral arteriosclerosis. Barbiturates, chloral and most narcotics depress still further the cerebral oxygen consumption, and thereby increase an already critical cerebral anoxia.

Rauvolfia and chlorpromazine may help control agitation, but side effects may limit their usefulness and a Parkinson-like syndrome may result.(23) There is no evidence that metiazol or meratran are helpful as cerebral stimulants(23) in victims of cerebral arteriosclerosis.

Antihypertensive agents are properly in use for hypertensive disease, but in patients with cerebral arteriosclerosis the blood pressure should not be reduced to normotensive levels for cerebral ischemia may result. The ganglionic blocking agents may lead to postural hypertension and a tragic result from the precipitous drop in blood pressure and the accompanying cerebral arterial insufficiency. Dr. David Barr(25) states that he believes that many (even the majority?) of cerebral infarctions occur without organic occlusion of a vessel. Excessive doses of hypotensive agents may tip the scales in a delicately balanced cerebral blood flow.

Anticoagulant therapy is an appreciable advance in the treatment of cerebral vascular diseases. The purposes of anticoagulant therapy in cerebro-thrombosis or embolism have recently been outlined by Wright and his associates:(19)

1. To prevent new emboli.
2. To prevent propagation.
3. To prevent additional thrombi in other vessels.
4. To prevent stasis venous thrombosis from lying in bed.
5. To encourage more rapid disintegration of the thrombus by enzymes which act more freely in the presence of anticoagulants.
6. To promote more rapid recanalization of the thrombus.

The first report in the literature concerning anticoagulant therapy for cerebral vascular dis-

ease appeared in *Acta Medica Scandinavica* in 1941.(26) Dr. Per Hedevis reported 26 patients with cerebrovascular disease; of these 18 had cerebral thrombosis and were given heparin with five good results, 13 uncertain affects and three without benefit. Two patients had cerebellar thrombosis and one had a good result and one no effect. Six patients had cerebral embolus and two patients had a good result, two uncertain and two none.

Drs. E. V. Allen and Nels W. Barker of the Mayo Clinic in 1943 were first in the United States to suggest the use of anticoagulants in the treatment of thrombosis of the cerebral arteries.(27)

In the following years numerous anecdotal reports appeared in the literature, (16)(28) both supporting(15) and opposing(29) the use of anticoagulants. The most recent and comprehensive evaluation of prolonged anticoagulant therapy in cerebro-vascular disease is reported by Wright and his associates.(31) A total of 57 patients were observed both on and off of anticoagulant treatment. Thirty-one of these patients had intramural thrombi, either due to rheumatic heart disease with auricular fibrillation, or arteriosclerotic heart disease with myocardial infarction; 19 had arteriosclerosis cerebrae, and seven had hypertension or other cerebral diseases. The results are as follows:

| | | | |
|-------------|-------------|---------------------|---|
| No Rx | 57 patients | 795 patient months | 205 thromboembolic episodes 81 cerebral |
| Anticoag Rx | 57 patients | 1162 patient months | 23 thromboembolic episodes 6 cerebral |

Compared by a ratio on the basis of a thousand patient months the figures would run somewhat as follows: in the treated cases there were 22 total thrombo-embolic in a 1000 patient months. Those same patients when untreated for a 1000 patient months would have had 350 total thrombo-emboli. The treated patients had seven cerebral thrombo-embolic and the untreated patients would have at the same rate approximately 150.

In the author's experience extending over a 9 year period with a total experience in excess of 100 patients on ambulatory anticoagulant therapy(25) 16 patients had cerebral-vascular disease the results are similar.

Millikan and Seibert(16b) have reported favorable experiences in 10 patients and they expressed as late as October 1955(15a) their indications for the use of anticoagulant drugs in

- cerebrovascular diseases:
1. Intermittent insufficiency or thrombosis within the field of the basilar artery system.
 2. Intermittent insufficiency or occlusions of the internal carotid artery.
 3. Multiple cerebral infarctions.
 4. Prevention of thrombo-embolic phenomena in patients with rheumatic heart disease and mitral stenosis or patients with coronary thrombosis and myocardial infarction.

In occluded arteries in the brain, hemorrhage commonly occurs around the edges (i.e. "hemorrhagic infarct"). This is not a contraindication to anticoagulants.(19)(31) The same phenomenon occurs in infarcts of the heart, lung, kidney. Blumgart studied this problem in animals and found bleeding in all infarcted areas. However, the animals on anticoagulants did not have an increase in blood around the infarctions compared to the controls; neither was healing delayed.

REHABILITATION: Not the final but a concurrent phase of treatment is rehabilitation.(32)

At the earliest possible time, sandbags and splints are applied to keep the exrtemities in the optimum positions. The extremities are put through the full ranges of motion ten to fifteen times, three or four times per day, beginning

on the second day. Early ambulation is desirable unless contraindicated and exercises with the use of pulleys are encouraged. For some patients a short leg brace with a 90° stop is a great aid in walking. Constant psychological help is an essential to get the patient to try to help himself and to regain some measure of hope and confidence. Of 1000 patients with cerebrovascular disease treated by Rusk, of an average age of 60, 900 were taught to walk and care for themselves and 400 returned to gainful work.

CASE REPORTS

The following are five brief case reports to exemplify the author's experience with anti-coagulants on a prolonged basis in patients with cerebrovascular disease:

- (1)
Patient: Mr. D. R., Age 74

Seen: Feb. 1, 1954

CC: Obvious weakness in the right hand for the past two weeks. Patient first noticed a sudden onset of dizziness, weakness, awkwardness, and numbness of the right hand two weeks previously, while trying to hold some cards in a card game. This condition persisted, and in addition, the patient's wife was aware of some loss of mental acuity over the past year.

On examination, patient's fundi revealed a two plus arteriosclerotic change. His blood pressure was 155/105. Neurological examination revealed that the right arm was ataxic and there was some hyporeflexia. Deep and superficial reflexes were essentially within normal limits, but the point to point and rapid rhythmic alternating movements of the right arm were impaired. The sensory tests were within normal limits.

Patient was started on anticoagulant therapy on 2-19-54, and on 3-1-55 the ataxia had completely subsided and the point to point and rapid rhythmic alternating movements of the right arm were within normal limits. The patient's wife stated that the patient's mental status had improved considerably. The patient has remained on the anticoagulant therapy until the present time (2-4-56) and no further episodes have occurred.

DIAGNOSIS: Insufficiency of the Basilar Artery System.

(2)

Patient: Mr. S. P.

Seen: February 20, 1954

Patient is a white male, age 61, with gangrene of the right leg. He had suffered a coronary thrombosis, myocardial infarction in 1949, and a cerebral vascular accident with a right hemiparesis in 1952.

On examination, the patient had obvious arterial occlusion of the right lower extremity, right hemiparesis, and his speech was thick and slurred, and he was confused.

The electrocardiogram revealed evidence of an old posterior wall infarction, left ventricular hypertrophy, and an occasional premature ventricular systole.

The patient was placed on anticoagulant therapy, together with medical vaso-dilating procedures and he made a slow, steady, and uneventful recovery, and there have been no further thrombo-embolic episodes for the following two years.

DIAGNOSIS: Arteriosclerotic heart disease, with myocardial infarction, mural thrombus and emboli to the leg and to the brain.

(3)

Patient: Mrs. A. S.

Seen: September 10, 1947

CC:

Weakness in the right arm and leg for the previous two weeks. Patient is age 55.

Examination revealed hyperactive deep reflexes in the right arm and leg and a positive plantar response. Patient's blood pressure was 180/130.

Patient was started on anti-hypertensive regime, and anticoagulants were instituted. In June of 1948 the patient discontinued the anticoagulant therapy on her own responsibility, and seven months later suffered a coronary thrombosis and myocardial infarction. Anticoagulants were restarted and the patient has remained on anticoagulants to the present date — a total of 7 years — without further thrombo-embolic episodes.

DIAGNOSIS: Cerebral thrombosis; Coronary Thrombosis with myocardial infarction; Essential hypertension.

(4)

Patient: Mr. C. E. W., Age 57

Seen: April 17, 1946

Patient has a previous history of coronary occlusion and myocardial infarction in August of 1945. This patient was followed on conservative treatment, without untoward episodes until January, 1954, when it was noted that early Parkinson's signs were present. Treatment was instituted with anti-Parkinson's therapy, and the patient improved for a while; however, by November, 1954 there was progressive increase in Parkinson's symptoms and he then developed a momentary loss of reality and felt faint. An electrocardiogram did not reveal changes of significance, but there was rapid loss of mental acuity and increased confusion. It was felt that the patient was having multiple small foci of cerebral thromboses, and anticoagulant therapy was started in December of 1954. Since that time the patient has improved steadily and mental acuity has returned, and there have been no further thrombo-embolic episodes.

DIAGNOSIS: Focal cerebral thromboses;

Parkinsonism; Coronary occlusion and myocardial infarction.

(5)

Patient: Mrs. N. A., Age: 84

Seen: December 24, 1955

Patient has a history of known heart disease, with total irregularity, for the previous five years, with sudden loss of circulation in the left leg, with an area of gangrene on the left heel five weeks before, and then a sudden onset of right hemiparesis and right facial weakness, coma, and aphasia.

Examination revealed an acutely ill woman with auricular fibrillation, coma, and right hemiparesis, and complicating bronchial pneumonia. Patient was started on antibiotics with supporting therapy and anticoagulants. There has been steady improvement. The aphasia has cleared, there are no sensory defects and the remaining problem is the right hemiparesis. Patient is being maintained on anticoagulants.

DIAGNOSIS: Arteriosclerotic heart disease, with auricular fibrillation and multiple emboli to the arm, leg and brain.

CONCLUSIONS

1. The cerebro-vascular diseases today number almost two million victims in the United States and claim an expensive share of the Nation's pocketbook.

2. There is no conformity of terminology and the confusion of words causes a confusion of thought and communication as well as diagnosis and treatment. There is a need for a definition of terms of specific pathological entities.

3. Diagnoses can often be specifically differentiated by detailed physical examinations and appropriate laboratory and X-ray studies.

4. Cerebral blood flow can be improved by appropriate therapeutic measures.

5. Cerebral blood flow can be impaired by inappropriate doses or types of medications.

6. Anticoagulant therapy of thrombo-embolic cerebro-vascular disease has assumed a major therapeutic role in properly selected cases.

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THE MEDICAL MANAGEMENT OF THE ACUTE CARDIAC EMERGENCIES

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FEW conditions tax the physician's diagnostic and therapeutic skill as do acute cardiac emergencies. It is here that lives may be saved by prompt and proper handling of these patients.

Acute Pulmonary Edema is probably the most frequent cardiac emergency for which the physician is called in the early hours of the morning. The patient presents an alarming picture of orthopnea, cyanosis, copious frothy sputum, coarse wet rales, and rhonchi which are heard at a distance. This condition may mask an acute myocardial or pulmonary infarction, and may be the only presenting manifestation of one of these conditions. Failure of the patient to respond to measures about to be detailed should arouse the suspicion of the presence of one of these processes, thereby preventing treatment from being effective.

Treatment:

(1) The patient should be seated upright.

(2) If bronchial asthma or severe pulmonary insufficiency are not present, a hypodermic injection of Morphine Sulphate 10 - 15 mg. (gr. 1/6 - 1/4) and Atropine Sulphate 0.5 - 1 mg. (gr. 1/100 - 1/50) is given.

(3) "Bloodless venesection," consisting of blood pressure cuffs placed around both thighs and arms and inflated to the diastolic pressure, is helpful. As the patient improves, the cuffs are released in rotation.

(4) If this is ineffective, a phlebotomy may be done, if anemia is not present.

(5) Aminophyllin 0.5 gm. (gr. 7.5) in 20 cc. of water can be given slowly intravenously.

(6) Oxygen therapy is helpful. A flow of 6 - 7 liters of oxygen per minute should be maintained. 95% of ethyl alcohol in the oxygen humidifying apparatus, used for nasal catheter inhalation, or 30 - 40% ethyl alcohol in the humidifier for the mask decreases intra-alveolar exudation, and so improves ventilation.

(7) Intermittent positive pressure breathing, if available, has been found very effective, using 15 - 20 cm. of water pressure.

(8) If these measures fail, a rapidly acting Digitalis Glycoside should be given. Any one of the following may be given intravenously:

Oubain 0.5 mg.; Digoxin 1 mg.; or Cedilanid 0.8 mg.

(9) In refractory acute pulmonary edema associated with hypertension, Arfonad, a ganglionic blocking agent is worthy of trial. The contents of a 5 cc. ampoule (1 cc. contains 50 mg.) are put in 250 cc. of 5% glucose in water and infused at a rate of 10 drops (0.5 mg.) per minute. The rate of flow is gradually increased until a 25 - 30% reduction in the blood pressure level is obtained. The blood pressure is maintained at this level until patient is out of his attack.

Acute Myocardial Infarction: It is beyond the scope of this paper to delve into the diagnosis of this condition or to consider treatment after the acute phase has passed. When first seen at home, the patient is given Morphine gr. 1/4 subcutaneously. If in severe pain, a slow intravenous of Morphine, gr. 1/8 - gr. 1/6, instead, may be given. If ineffective, one-half of the previous dose can be repeated after 5 minutes. Whenever possible, hospitalization is indicated. While awaiting the arrival of the ambulance, Vasoxyl 20 mg. should be given intravenously to maintain the blood pressure. While in the ambulance, the patient should be given oxygen therapy. Upon arrival at the hospital, if the systolic blood pressure is below 90 mm. of mercury, shock therapy should be started at once. The drug of choice is Levophed by intravenous drip. While waiting for this solution to be set up, Vasoxyl 10 mg. is again given intravenously so as not to lose valuable time. Two ampoules (4 cc. per ampoule containing 4 mg.) of Levophed as well as an ampoule containing Heparin Sodium 50 mg. are added to 500 cc. of 5% glucose in distilled water, and infused intravenously at a rate of about 20 drops per minute. The rate of infusion is adjusted so as to maintain a low normal pressure. When the pressure has stabilized at the desired level, the infusion is gradually discontinued over a period of 4 - 8 hours.

Stokes-Adams Attacks refer to attacks of syncope with or without convulsive seizures due to prolonged asystole (5 - 10 seconds or more). The patient loses consciousness and is found to be pulseless. These attacks occur in complete

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heart block, in periods of ventricular tachycardia or fibrillation with or without associated complete heart block.

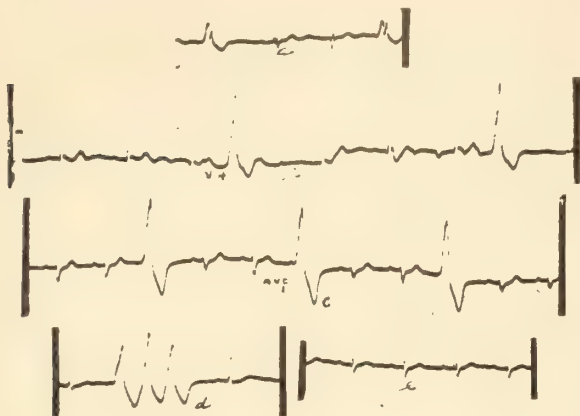


Fig. 1. Stokes-Adams Attack

a. Day before the attack

b. Immediately after the attack

c. 6 days after the attack

d. 12 days after the attack

e. Sinus rhythm following 0.6 gm. Quinidine Sulphate intravenously

Treatment: The drugs of choice are:

(1) Epinephrine 0.3 to 0.5 cc. of 1:1000 dilution subcutaneously for acute episodes of ventricular standstill.

(2) Isuprel 0.2 mg. subcutaneously when the underlying mechanism of the attacks is unknown. If urgency dictates, Isuprel 0.02 mg. may be given intravenously.

Recently the use of an externally applied electrical stimulus, called the Cardiac Pacemaker, has been found to be effective in patients with ventricular standstill who are refractory to other forms of treatment. This method is ineffective in those attacks due to paroxysmal ventricular tachycardia or ventricular extrasystoles.

Paroxysmal Cardiac Arrhythmias arising in individuals with pre-existing organic heart disease, if not checked, will lead to congestive failure, syncopal attacks, embolism, or pulmonary edema. These are supraventricular nodal tachycardia, and ventricular tachycardia. Atrial and/or nodal tachycardia will be referred to as atrial tachycardia for the sake of simplicity, since the therapy for these is identical. An immediate effort should be made to interrupt the arrhythmia.

Paroxysmal Atrial Tachycardia occurs most often in young adults with normal hearts. Its

onset is sudden, and the rhythm is regular at a rapid and constant rate of about 160. An important feature of this tachycardia is the constancy of the apical rate. Arising in the course of pre-existing heart disease, especially associated with congestive heart failure, or during a surgical operation, it may constitute a real threat to the patient. When carotid sinus or ocular pressure is effective, this type of tachycardia ends immediately. No other tachycardia responds so dramatically to carotid sinus pressure, but, unfortunately, many paroxysms of atrial tachycardia do not show this response.

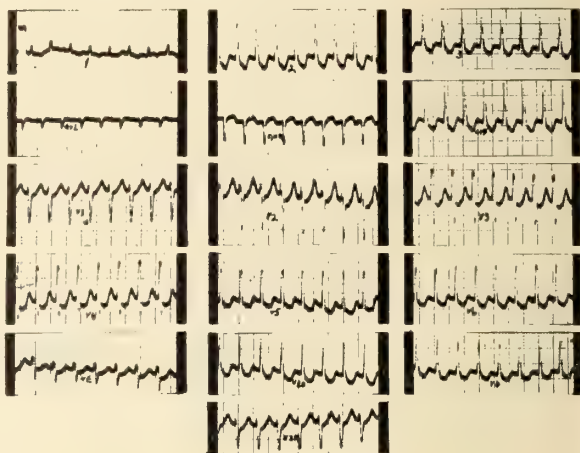


Fig. 2. Paroxysmal Atrial Tachycardia, Rate 214

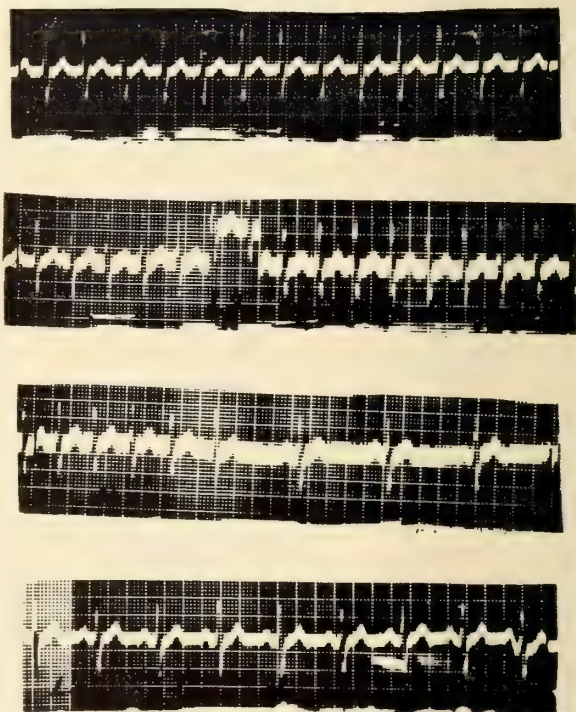


Fig. 3. Paroxysmal Atrial Tachycardia, rate

136, with resumption of rhythm to normal sinus rhythm, rate 93, following carotid sinus pressure.

Treatment: Any one of the vagal maneuvers may be tried:

- (1) Carotid sinus pressure;
- (2) Ocular pressure;
- (3) Valsalva's experiment;
- (4) Induction of vomiting either mechanically, or by drugs such as Ipecac or dilute solution of mustard.

If any of these measures is ineffective, a resort to drug therapy is indicated. The following therapy may be mentioned:

- (1) Cedilanid, 0.8 mg., given slowly, intravenously, provided the patient has not received any digitalis in the preceding two weeks, is usually effective.
- (2) 10% Solution Calcium Gluconate, 10 cc., intravenously.
- (3) 20% Solution Magnesium Sulphate, 10 cc., intravenously.
- (4) Neosynephrin, 0.5 - 1 mg., intravenously. This drug has stopped attacks in 1 - 2 minutes, but it should be avoided in hypertension or coronary artery disease.
- (5) Mecholyl, 25-50 mg., subcutaneously. I caution against the use of this drug because of the alarming period of asystole which may occur before the normal pacemaker resumes control of the rhythm.
- (6) Prostigmin Methylsulphate 1 - 2 cc. of a 1:2000 dilution intramuscularly.

While the drugs just listed may not always be effective in restoring normal sinus rhythm, they nevertheless increase the sensitivity of the carotid sinus about 20 minutes after administration, and thereby render the sinus responsive to pressure.

Quinidine has had wide usage in the treatment of paroxysmal atrial tachycardia. The dosage employed is the same as will be described under the management of paroxysmal ventricular tachycardia.

Paroxysmal Ventricular Tachycardia is a serious type of arrhythmia. Generally, a series of six or more ventricular extrasystoles occurring in succession constitute a paroxysm of ventricular tachycardia. It usually occurs in patients with serious coronary artery disease, or digitalis poisoning. The diagnosis of this tachycardia is difficult to establish clinically, and requires

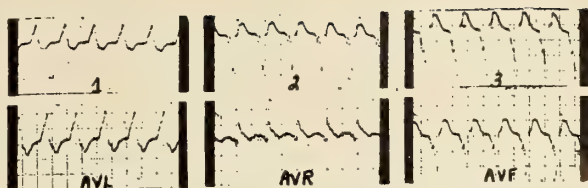


Fig. 4. Paroxysmal Ventricular Tachycardia, rate 150

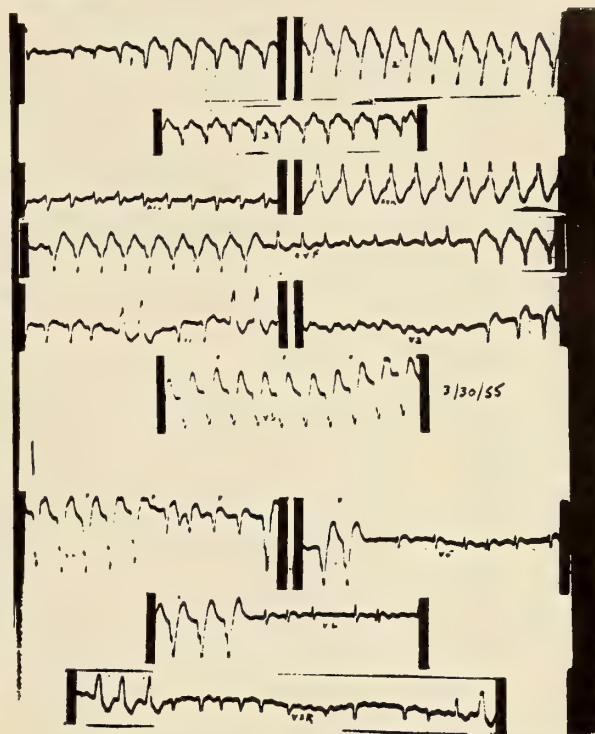


Fig. 5. Paroxysmal Ventricular Tachycardia, rate 166, partially interrupted by 0.6 gm. Quinidine Lactate intravenously.

electrocardiographic means for definite diagnosis.

Treatment: Carotid sinus pressure is ineffective in interrupting a paroxysm. Treatment will depend on the cause. If due to digitalis poisoning, temporarily stopping digitalis and administering Potassium Chloride 1 gram orally three times daily is usually effective. If urgent, Potassium Chloride 0.75 gm. in 100 - 300 cc. of 5% glucose in distilled water can be given intravenously, monitored by frequent serial electrocardiograms.

When this condition is not due to digitalis intoxication, Quinidine or Procaine Amide (Pronestyl) may be used. The route of administration will depend on the urgency of the situation. If paroxysmal ventricular tachycardia occurs during surgery or immediately post-operatively, or when the condition precludes the

oral route and the condition is urgent, the contents of an ampoule of Quinidine Lactate, Hydrochloride, Gluconate, or Sulphate, 0.6 gms. are added to 200 cc. or 5% glucose in distilled water and infused slowly by drip, monitored by direct reading electrocardiographic tracing. The intravenous route is discontinued as soon as reversion to normal sinus rhythm has occurred. When this has occurred, the patient is maintained on Quinidine 0.2 - 0.4 mgs. intramuscularly 3 or 4 times daily until the oral route becomes possible. When the situation is not urgent, the oral route may be used. Quinidine Sulphate 0.2 gm. is given as a test dose. If, after 4 hours, no sensitivity or reactions to the drug occur, 0.6 gm. may be given 4 times a day. The next day, if reversion to sinus rhythm has not taken place, the dose is increased gradually to 1 gram 4 times a day. It is important to maintain strict electrocardiographic control once the heart has slowed.

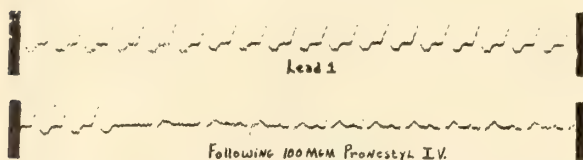


Fig. 6. Paroxysmal Ventricular Tachycardia, rate 150, with conversion to sinus tachycardia, rate 120, following intravenous administration of 100 mg. Pronestyl.

The mistake often made in Quinidine therapy is that the patient is not given enough of this drug. Occasionally, when reversion has not occurred, a subcutaneous or intravenous injection of Atropine Sulphate 1 - 2 mg. (gr. 1/60 - 1/30) given one-half hour after the last and largest dose of Quinidine may restore the heart to normal rhythm.

Procaine Amide (Pronestyl) may be given orally in doses of 0.25 - 0.5 gm. every 2 - 4 hours until the attack is controlled. When urgency dictates, the contents of a 10 cc. ampoule (1 cc. contains 100 mg.) of Procaine Amide (Pronestyl) are injected intravenously no faster than 1 cc. per minute, monitored by a direct reading continuous electrocardiographic tracing.

Atrial Fibrillation and Atrial Flutter will be considered together because the treatment is similar in both.

Atrial Fibrillation is almost always observed in myocardial disease of an advanced grade. It is observed in 60% of patients with heart fail-

ure. Frequently associated factors are hypertensive, arteriosclerotic, cardiovascular disease, rheumatic heart disease, thyrotoxicosis and toxic states. Auscultation reveals a totally irregular rhythm. If apical and radial rates are compared simultaneously, a pulse deficit is noted. Multiple extrasystoles at times are difficult to differentiate from atrial fibrillation. Exercise usually diminishes the extrasystoles, but increases the irregularity of atrial fibrillation. Here again, the electrocardiogram is most helpful.

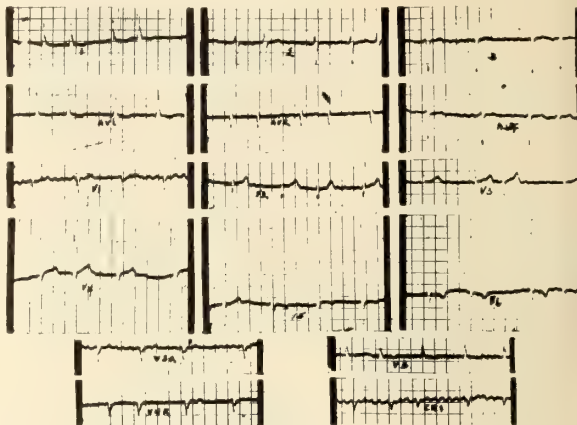


Fig. 7. Atrial Fibrillation

Atrial Flutter is usually seen in patients with moderately advanced or severe myocardial disease. The symptoms of this condition are similar to those of other types of rapid heart action except for a greater tendency to develop heart failure. The diagnosis is established by the electrocardiogram.

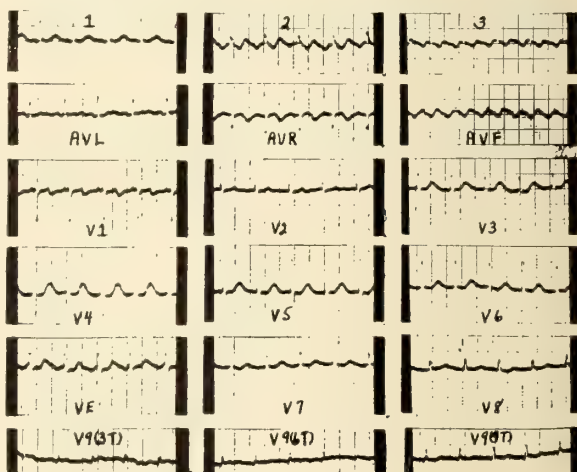


Fig. 8. Atrial Flutter

Treatment: Digitalis is the drug of choice. Digitalization should be performed rapidly if a severe grade of heart failure is present and/or when the rate is rapid. One of the following

should be given intravenously, followed in four hours by a similar dose:

- Cedilanid 4 cc. (0.8 mg.) or
- Digoxin 3 cc. (.75 mg.)

This should be followed by daily oral maintenance doses of either Gitaligin 0.5 or Digoxin 0.5 mg. The conversion of this arrhythmia is beyond the scope of this paper.

Ventricular Fibrillation is usually viewed as a terminal and terminating incident in certain

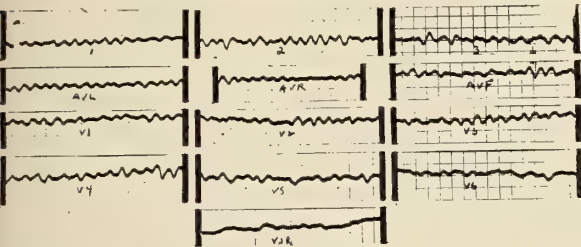


Fig. 9. Ventricular Fibrillation

instances of sudden death; such as, during an attack of angina pectoris or acute coronary occlusion, and following anesthesia. It is an extreme arrhythmia characterized by rapid, irregular, uncoordinated and ineffective twitchings of the ventricle. The electrocardiogram shows rapid regular or irregular oscillations representing bizarre QRS complexes. Quinidine administered intravenously have been found useful in those cases which have survived long enough to receive this medication. The dosage is the same as that given for paroxysmal ventricular tachycardia.

Summary:

1. The commonly occurring acute cardiac emergencies have been presented.
2. Treatment for these conditions was outlined.

PHOENIX *Clinical* CLUB

The Case History in this discussion is selected from the Case Records of the Massachusetts General Hospital, and reprinted from the New England Journal of Medicine. The discussant under Differential Diagnosis is a member of the staff of the Massachusetts General Hospital. The other discussants are members of the Phoenix Clinical Club.

MASSACHUSETTS GENERAL HOSPITAL PRESENTATION OF CASE

A FORTY-THREE-YEAR-OLD woman was admitted to the hospital with dysphagia and headache.

The patient was in apparent good health until two and a half months prior to admission, when she noted difficulty in swallowing liquids. Attempts to drink milk, for example, were followed by choking and she had difficulty in getting her breath. The dysphagia was not always present, and she apparently had no difficulty in swallowing solid foods. She also noted that her voice was weak and hoarse. Lying down at night brought on a feeling of oppression in the chest, and was not relieved by sitting up. A sense of obstruction was present in the throat resulting in constant unproductive attempts to clear the throat. There was no coughing or expectoration. Three weeks before

entry she developed severe pounding headache aggravated by motion. It was worse in the morning, often beginning as a generalized throbbing and finally localizing in the right temple. Two weeks prior to admission she noted marked weakness of the right arm and was unable to control its movement when reaching for things. The legs felt stiff, and she seemed unable to lift them. Sharp pains were present in the left leg. About four months before admission the patient had several episodes of pain and fullness in the epigastrium that came on about an hour after meals. The distress was relieved to some extent by a hot-water bottle but not by food. A local physician made the diagnosis of gastric ulcer by fluoroscopy. Following treatment the symptoms disappeared and at the time of admission she had been free of epigastric distress for three months.

Physical examination revealed a poorly developed, emaciated and dehydrated woman with a weak, hoarse voice. The breasts were poorly developed but otherwise negative. There was no adenopathy. The pupil reacted to light and accommodation. The gait was shuffling. The Romberg sign was positive. The right shoulder drooped and could not be raised; the muscles of the right shoulder and upper arm showed

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¹Albertson, H. A. and Trout, H. H., Jr.: *Antibiotics Annual* 1954-55, Medical Encyclopedia, Inc., New York, N. Y., 1955, pp. 599-602.

²Prigot, A.; Whitaker, J. C.; Shidlovsky, B. A., and Marmell, M.: *ibid.*, pp. 603-607.



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ACHROMYCIN ACHROMYCIN

hypotonicity and some atrophy. There was a tendency toward "winging" of the right scapula. All the deep tendon reflexes were hyperactive, more so on the right. The right lower abdominal reflex was diminished. The plantar responses were flexor in type bilaterally. The finger-to-nose and heel-to-knee tests showed awkwardness and overshooting bilaterally, but more so on the right.

The temperature was 98.6°F., the pulse 94, and the respirations 20. The blood pressure was 116 systolic, 70 diastolic.

Examination of the blood showed a red-cell count of 4,520,000, with 14 gm. of hemoglobin, and a white-cell count of 8500, with 60 per cent neutrophils. The urine and stools were negative. The serum protein was 6 gm. per 100 cc.; the blood sugar and the serum non-protein nitrogen were normal. A tuberculin test in a dilution of 1:1000 was negative. A Hinton test was negative.

A roentgenogram of the chest revealed a few linear shadows in the left third and fourth interspaces anteriorly. An ill-defined shadow was present in the region of the left hilus. An x-ray examination of the skull was negative. Two electroencephalograms taken soon after admission revealed a diffuse spotty dysrhythmia without focal distribution but generally worse toward the occiput.

A lumbar puncture revealed clear colorless fluid. The pressure was normal initially and responded normally after jugular compression. No cells were present; the protein content was normal, and the Wassermann test was negative. An examination of the larynx revealed complete paralysis of the left vocal cord, which lay in the so-called "cadaveric position." The right cord functioned normally.

On the twentieth hospital day the temperature gradually began to rise, reaching 102°F. over a period of about thirty-six hours. She developed some cough, raising a small amount of sputum, and there was pain over the left anterior chest on coughing. The left apex and upper chest were dull to percussion, with bronchial breath sounds anteriorly and an expiratory grunt. There were coarse rales over the left apex posteriorly. The liver was palpable two fingerbreadths below the costal margin. A sputum culture revealed alpha-hemolytic and a few beta-hemolytic streptococci, and a blood culture was

negative. The white-cell count was 24,000. A catheterized urine specimen was negative. A roentgenogram of the chest revealed irregular patchy consolidation of the left upper lobe and a small amount of fluid in the posterior costophrenic sinus.

The temperature continued to range between 100 and 102.6°F. Respirations were shallow and rapid, and the patient appeared dehydrated and slightly cyanotic. She was treated with sulfadiazine and oxygen. On the twenty-sixth hospital day, the patient became jaundice and a moderate amount of bile appeared in the urine. Sulfadiazine was stopped and penicillin was substituted. She was also given potassium iodide because of difficulty in bringing up the tenacious sputum. Diffuse coarse rales were audible throughout the lung field.

On the thirtieth hospital day the patient began to improve. The temperature gradually fell to normal and the sputum diminished in quantity. The icterus cleared completely, and the liver was no longer palpable. The lungs showed slight dullness over the entire left chest with scattered fine and coarse rales, and normal breath sounds diminished over the left apex anteriorly. There was slight sacral edema. The total plasma protein was 5.3 gm. per 100 cc., with an albuminglobulin ratio of 0.93. The serum chloride was 90 milliequiv. per liter. A cephalin flocculation test was negative in twenty-four and in forty-eight hours. X-ray examination of the chest revealed little change in the appearance of the left upper lobe.

The temperature continued to range between normal and 100°F., occasionally reaching 101°F. The neurologic signs originally noted became more marked, with extreme weakness of the right arm. A positive Hoffman sign appeared on the right, but the Babinski signs were negative. Dulness and bronchial breath sounds reappeared over the left upper lobe and were accompanied by scattered fine rales and a cough, which was moderately productive of purulent sputum. Another chest film revealed no change in the left upper lobe, but the right lung field showed increased linear markings. Pleural fluid was present bilaterally. Several convulsions of the Jacksonian type occurred, each lasting several minutes. The convulsive movements started in the right hand and arm, spreading to the leg and face. The seizures

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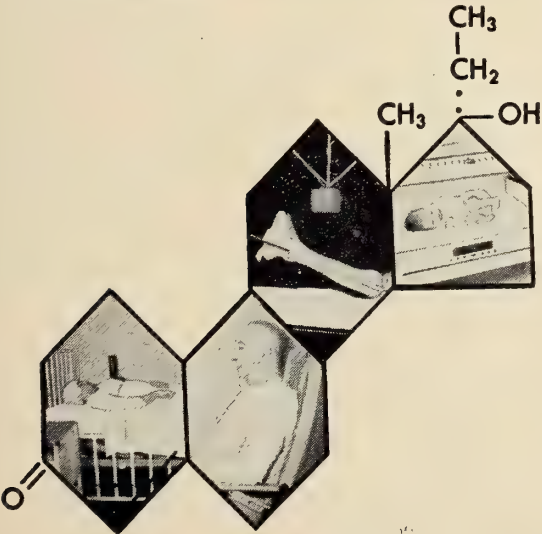
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were followed by drowsiness and sleep. On the fortieth hospital day a Babinski sign was elicited on the right and there was prolonged ankle clonus on the right. There was dullness to pinprick in the right leg. On the same day the patient had a convulsion followed by temporary aphasia.

She continued to cough and raise large quantities of green mucoid sputum. She became uncooperative, refusing all food and medication. The chest signs remained unchanged. She became extremely weak and drowsy and expired on the fifty-third hospital day following a convulsive episode.

DR. JOSEPH MADISON GREER

A 43 year old woman with dysphagia and headaches for two and a half months. Difficulty in swallowing liquids, was hoarse and had headaches in the right temple. Oppression in the throat, (could swallow solids but not liquids). The headache was aggravated by motion localized in the right temple. Weakness and lack of control of the right arm; shoulder drooping, legs stiff and heavy.

Past history unimportant but her doctors diagnosed gastric ulcer and cured her before she came into the hospital.

She developed what was probably pneumonia while she was in the hospital and this subsided under treatment. She had convulsions and these increased in frequency and she went right on and died on the 53rd hospital day in spite of all they could do.

I will review some of the important points of the Physical Examination for my own thinking as well as for some of the fellows who perhaps have not read the case (I know we are not supposed to do this but just for fun how many HAVE read the case?)

She was poorly nourished, had a weak hoarse voice, a shufflings-gait with a positive Romberg and the co-ordination was interfered with which to me indicates something wrong with the cerebellum. The right shoulder drooped and could not be raised; This suggests some involvement of the 11 cranial nerve the spinal accessory and the circumflex and these have their origin in the 5th & 6th cervical. The deep tendon reflexes were hyperactive which indicates a lesion in the upper motor neuron.

At first the blood picture was not remarkable

and there was no temperature. (This picture was changed during the time of her stay in the hospital.) However, at the time of entrance into the hospital there was something in the chest and there was an undefined shadow in the region of the left hilus. It seems to me that this is significant. We should remember this in our discussion.

I do not know too much about Electroencephalograms but it was stated that it was worse toward the occiput which is in the region of the cerebellum.

We are told that there was complete paralysis of the left vocal cord. This would account for her hoarse voice and an associated condition from probably the same origin would explain why she could not swallow and the fact that she could swallow solids and not liquids would rule out organic constriction and indicate spasm which would mean that it was of nerve origin. Was this a central or high cord lesion or a peripheral lesion. I can find no suggestion that it could be peripheral in the protocol so I shall assume that it was central. The recurrent laryngeal nerve supplies the vocal cords and is a branch of the Vagus or 10 cranial nerve. This gets back to the neighborhood of the base of the brain and we now note that we have a paralysis of the left vocal cord and a weakness of the right arm. As we remember these tracts crossover someplace in this area.

We now are told that she has a positive Hoffman sign (which is a flexion of the terminal phalanx of the thumb when we click the end of the index finger from flexion to extension and is said to indicate some involvement of the lateral motor tract.) The Babinski sign was negative at first, but appeared later.

Epileptiform convulsions appeared, of the Jacksonian type, and started in the right hand and arm. This usually means an organic lesion in the motor cortex, but may be more definitely localized.

At first there was no temperature and the blood was essentially normal but on the 20th hospital day she began to have temperatures up to 102 and a blood count of 24,000 and there was something more in the chest. She developed cough, sputum and pain over the left chest and the left apex was dull and the x-ray showed patchy consolidation and some fluid. This was no doubt a pneumonitis and



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about the same time she developed an acute hepatitis and she had a large and tender liver and became jaundiced. This was the 26th hospital day.

On the 30th hospital day she began to improve and the jaundice cleared completely. They had cured her pneumonia and hepatitis with sulfadiazine and penicillin. The blood chemistry was relatively normal but the x-ray examination revealed little change in the appearance of the left lobe of the lung. The patient was not cured and continued to have temperature although not so high and the neurologic signs became more marked.

On the 40th day the chest findings were increased and she had convulsions and a Babinski sign was noted on the right as well as angle colonus and sensory changes in the right leg. The patient continued to have convulsions and developed aphasia. There was continued cough and sputum and she refused all food and medication, became uncooperative and expired on the 53rd hospital day, following a severe convulsion.

DISCUSSION:

The neurological signs and symptoms seem to be the most important and indicate a lesion in the brain.

Is this a vascular pathology? I would say not. It could hardly be luetic as both blood and spinal fluid were negative. Could it be a vascular accident? I would say not as she is not in the age group nor is there any indication of circulatory trouble, that would indicate a hemorrhage or an embolus or thrombus. Could it be an infectious process with brain abscess or meningitis? Yes I suppose it could be and sometimes brain abscesses are hard to diagnose. However, she had trouble before we had any history of infection.

Could this lesion be in the nature of a new growth? Yes, I think that it could. If so is it primary in the brain or is it metastatic? If it is metastatic where is the original tumor? We have been told at two different times about the lesion in the left lung and I do not think that this can be ignored.

Therefore, it is my opinion that the condition is a metastatic new growth and that the original tumor is a tumor in the hilus or bronchus of the left lung. Probably a bronchogenic carcinoma. She could also have had metastasis to the liver.

DIFFERENTIAL DIAGNOSIS

DR. ARTHUR LINENTHAL: The problem in this patient appears to be one of disease involving structures within the chest as well as the central nervous system. Consideration of the neurologic lesion may appropriately follow discussion of the chest difficulty, since I think that the two are interrelated.

The presenting symptoms of this patient were difficulty in swallowing, difficulty in breathing, a sense of oppression in the chest, a sense of obstruction in the throat, and weakness and hoarseness of the voice. The complete paralysis of the left vocal cord, fixed in the cadaveric position midway between phonation and quiet inspiration, and the ill-defined X-Ray shadow in the left hilar region suggested that these findings as well as the symptoms may have been due to some process in the left hilar region involving the left recurrent laryngeal nerve and pressing on the esophagus and trachea. The emaciated condition of the patient on admission is consistent with the impression that a malignant growth was the likeliest basis of such a process.

Regarding the primary site of such a tumor, bronchogenic carcinoma seems most probable, although other locations must be considered. It is interesting that there had been no cough and no sputum before the patient entered the hospital, but this does not rule out a pulmonary neoplasm.

The statement that a gastric ulcer had been seen by fluoroscopy raises the question whether there was a gastric neoplasm with metastases to the hilar nodes and surrounding structures. Since the abdominal symptoms that led to the fluoroscopy subsided, X-ray studies of the stomach were not repeated, and we have no evidence on which to settle this question.

There is no evidence for other diseases that might have given rise to the presenting symptoms and physical findings. Neither physical examination nor X-ray examination showed evidence of an aortic aneurysm, and examination of the larynx did not reveal any intrinsic disease. Esophageal carcinoma might well have explained the presenting picture, but since no studies of the esophagus were made, there is no way to confirm this diagnosis.

At the end of the third week in the hospital, the patient developed a pulmonary infection in

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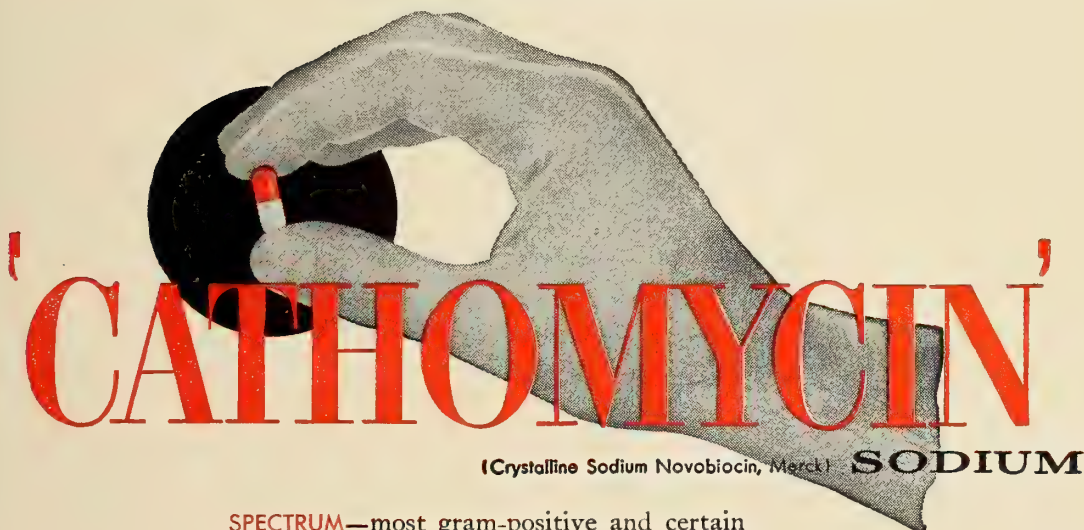
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the left upper lobe. This was marked by fever, cough, sputum and pain over the left chest. The respirations were rapid and shallow, and she became cyanotic. Physical examination gave evidence of consolidation over the left upper lobe, and this was confirmed by X-ray. Elevation of the white cell count suggests a bacterial etiology, but the sputum showed only alpha-hemolytic and a few beta-hemolytic streptococci. She was given sulfadiazine and then penicillin, but there was no evidence that these were of value. The patient improved, the physical findings over the left lobe diminished but never entirely disappeared, and the X-ray picture showed little change.

It is interesting that this severe pulmonary infection developed in the left upper lobe, since the lesion that I have supposed to exist at the left hilus could easily have compressed the upper lobe bronchus and caused some increased susceptibility to infection in that area. The linear shadows seen in the third and fourth left interspaces on the first chest film may have represented small areas of atelectasis.

At the time of the development of the pulmonary infection, before the patient had received any chemotherapy, the liver was found to be enlarged. Subsequently she was given sulfadiazine, and while receiving the drug, she became jaundiced and had bile in the urine. The sulfadiazine was stopped and soon afterward, along with improvement in the pulmonary condition, the jaundice disappeared and the liver became smaller.

It is difficult to be sure of the relation between the pulmonary infection, the sulfonamide therapy and what appears to have been an episode of acute hepatitis. Toxic hepatitis has been described after sulfadiazine, but the presence of the hepatic enlargement in this case before the sulfadiazine was given makes me believe that the sulfa drug was probably not responsible. Bacterial pneumonia may be accompanied by jaundice. There is also the possibility that both the pulmonary infection and the hepatitis were due to a virus infection. The negative cephalin flocculation test done at about the time the jaundice was subsiding suggests that the degree of liver damage was slight. No other liver function tests were done. The plasma proteins showed no significant change.

Obstructing lesions of the biliary tract must

be mentioned, but there is nothing to support such a diagnosis and the transient hepatic enlargement is suggestive of intrahepatic disease. There was apparently no abdominal pain at that time, and there is no evidence of gallstones. Metastatic disease of the liver or around the bile passages seems too remote to be seriously considered.

The pulmonary infection never entirely cleared up, and indeed at the time of death there was an increase in the physical findings, as well as a persistence of the X-ray abnormalities over the left upper lobe and the development of purulent sputum. Apparently the infection was a persistent one, either because of some blockage of drainage from the involved lobe or because of the characteristics of the infectious process. This may well have been a virus disease with superimposed bacterial infection.

The acuteness of the onset of the pulmonary infection, together with the absence of clinical or X-ray evidence of pulmonary tuberculosis on admission, seems to eliminate tuberculosis as a possibility. Unfortunately, there is no record of search for tubercle bacilli in the sputum.

The neurologic disorder was, I think, related to the disease in the chest; that is, it was caused by a metastasis of the malignant process. The problem here is to decide on the basis of the evidence presented how many neurologic lesions were present and where they were located.

The terminal neurologic findings were marked. The weakness in the arm, the appearance of a Hoffman sign, the development of Jacksonian convulsions starting in the right arm and hand, the appearance of a Babinski sign on the right with ankle clonus, the increase in the deep tendon reflexes on the right and the episode of temporary aphasia point to a lesion in the left cerebral hemisphere involving primarily the motor area for the arm with extension to the motor area for the leg and to the nearby speech area. Sensory changes, such as the late dullness to pinprick in the right leg, suggests subcortical extension of the process.

The earliest manifestation of any neurologic disorder was the development of weakness in the right arm. Subsequently the muscles of the right arm and the right shoulder girdle showed atrophy. This finding suggests a metastatic lesion involving the anterior-horn cells

of the right side of the mid-cervical spinal cord. There was hypotonicity, but the deep tendon reflexes were also increased. The atrophy can be explained on the basis of weakness of the right arm with resulting disuse. The stiffness of both legs at the onset is difficult to explain. The positive Romberg sign and the evidence of incoordination on admission may be attributed to weakness. It seems, therefore, that all the findings can be explained on the basis of one metastatic cerebral lesion.

The patient went down hill rapidly and died following a convulsive seizure, probably owing to involvement of a vital nervous center.

CLINICAL DIAGNOSIS

Tumor involving left motor cortex or brain (? primary, ? metastatic from bronchiogenic carcinoma).

Unresolved pneumonia: left upper lobe.

DR. LINENTHAL'S DIAGNOSIS

Bronchiogenic carcinoma of the left lung, with metastases to regional nodes and left cortical and subcortical regions of brain.

Unresolved pneumonia: left upper lobe.

Acute hepatitis, subsiding.

ANATOMICAL DIAGNOSIS

Carcinoma, oat-cell type, of left upper lobe, with metastases to bronchial, mediastinal, mesenteric and retroperitoneal lymph nodes, liver, kidney and brain.

Chronic pneumonitis: left upper lobe.

Bronchiectasis: left lower lobe.

Cerebral pressure cones.

PATHOLOGICAL DISCUSSION

DR. BENJAMIN CASTLEMAN: As Dr. Linenthal predicted, the pulmonary and cerebral lesions were related. This woman did have a bronchiogenic carcinoma, the primary focus being in the bronchus to the left upper lobe, which was completely occluded. The metastatic bronchial and mediastinal lymph nodes had infiltrated the wall of the left main bronchus, especially the lower lobe bronchus. The latter was so narrow that secondary bronchiectasis had developed through the lower lobe, the bronchioles being dilated and filled with purulent material. The primary tumor in the left upper lobe had extended into the parenchyma around the bronchus for about 4 cm., and the remaining pulmonary tissue in this lobe was

gray and rubbery, characteristic of the so-called "drowned out" or "stasis" pneumonitis.

There were three cerebral metastases. The largest, and the one that caused most of the cerebral symptoms, was a cystic lesion measuring 6 by 3 by 2.5 cm. in the left parietal region. The other two, each about 2 cm. in diameter, were solid nodules, one in the right posterior frontal region and one in the postero-inferior portion of the right cerebellar hemisphere. There was definite evidence of increased intracranial pressure, as shown by flattening of the convolutions and the deep cerebellar and temporal pressure cones.

The liver weighed over 2000 gm. and contained many metastatic nodules. I do not believe, however, that there was sufficient replacement or parenchyma to have produced even the transient jaundice. A likelier explanation is the presence of many metastatic lymph nodes surrounding and compressing the common bile duct.

Microscopically the carcinoma was extremely undifferentiated, showing no tendency to either keratinization or gland formation. In many places it suggested the oat-cell type.



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ARIZONA MEDICINE

Journal of

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VOL. 13

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The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
 2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
 3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
 4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
 5. Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.
 6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.
 7. Exclusive Publication—Articles are accepted for publication on condition that they are contributed solely to this Journal. Ordinarily contributors will be notified within 60 days if a manuscript is accepted for publication. Every effort will be made to return unused manuscripts.
 8. Illustrations — Ordinarily publication of 2 or 3 illustrations accompanying an article will be paid for by Arizona Medicine. Any number beyond this will have to be paid for by the author.
 9. Reprints — Reprints must be paid for by the author at established standard rates.
- The Editor is always ready, willing, and happy to help in any way possible.

JOINT COMMISSION ON
ACCREDITATION OF HOSPITALS

RECENTLY the Joint Commission on Accreditation of Hospitals as made up by the American Medical Association, American Hospital Association, College of Physicians and College of Surgeons has demanded that an organized plan for disaster be available in hospitals before they will be accredited. This is a desirable move for in all plans that ring of "Civil De-

fense," we, the American Public and Medical Profession move too slowly. As time goes on it becomes imperative that we take out this type of insurance, that plans be formulated and placed in reserve. We strongly commend this action of the Joint Commission on Accreditation of Hospitals.

It is obvious that Phoenix and Tucson are critical target areas with the great majority of our hospital beds and trained personnel in these communities. A great portion of both would be destroyed. The outlying communities would receive casualties and evacuees from these prime target areas. Further, the communities throughout the State must plan to receive casualties from the West Coast if war develops.

Joint planning between the Southwest communities of Albuquerque, Phoenix, El Paso and Tucson would be desirable. This recommendation has been made to Civil Defense authorities a number of times during recent years but no progress has been made for this coordinated effort.

Recently at the Arizona Medical Association Meeting a 200 bed mobile hospital was available. It attracted little interest, which is understandable. However, to maintain this unit available in our State would certainly be a desirable move and Civil Defense authorities should be encouraged to take every step possible to have this added emergency facility available for our relatively isolated segment of the country which we must make as self sufficient as possible.

D. W. N.

EXAMINATIONS FOR FELLOWS OF
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Examinations for qualified fellows of the International College of Surgeons will be held in Chicago, July 23-24 and October 29-30.

Oral conferences will be held on August 6 and October 22.

For details, write to the Secretary of the Qualifications Council, International College of Surgeons, 1516 Lake Shore Drive, Chicago 10, Illinois.

REPORT OF THE DELEGATES
ACTIONS OF THE HOUSE OF DELEGATES
American Medical Association, 105 Annual Meeting
June 11-15, 1956, Chicago

THIS summary of the recent meeting of the A.M.A. House of Delegates in Chicago is published at this time as an aid to the membership of our State Association in familiarizing each one with actions taken on important topics under discussion. It covers only a few of the many important subjects dealt with by the House, and is not intended as a detailed report on all actions taken.

Your Executive Secretary, Mr. Robert Carpenter and your Delegate attended all the meetings of the House. The Delegate was assigned by the Speaker to the Reference Committee on Rules and Order of Business.

Our former Governor, Mr. Howard Pyle, appeared on the Program arranged on Sunday afternoon by the Conference of State Presidents and other Officers. He delivered an address which was very well received by a large audience, on the "Body Politic." Mrs. Hamer and I entertained him at supper before he returned to Washington that evening to be near the President of the U. S. who had just undergone surgery.

Dr. David B. Allman, surgeon of Atlantic City, N. J. was named as president-elect for the coming year. A member of the A.M.A. Board of Trustees since 1951, and also chairman of the Committee on Legislation, Dr. Allman will become president of the American Medical Association at the June, 1957 meeting in New York City. He will then succeed Dr. Dwight H. Murray, Napa, Calif. who took office at the Tuesday evening inaugural program in the Chicago Civic Opera House.

Hospital Accreditation

The House of Delegates approved the report of the Committee to Review the Functions of the Joint Commission on Accreditation of Hospitals, which was appointed by the Speaker as a result of action taken at the June, 1955, meeting. The Committee came to the following conclusions:

"1. Accreditation of hospitals should be continued.

"2. The Joint Commission should maintain its present organizational representation.

"3. The Board of Trustees should report annually to the House of Delegates on the activities of the Joint Commission.

"4. Physicians should be on the administrative bodies of hospitals.

"5. General practice sections in hospitals should be encouraged.

"6. Staff meetings required by the Joint Commission are acceptable, but attendance requirements should be set up locally and not by the Commission.

"7. The Joint Commission should not concern itself with the number of hospital staffs to which a physician may belong.

"8. The Joint Commission is not and should not be punitive.

"9. The Joint Commission should publicize the method of appeal to hospitals that fail to receive accreditation.

"10. Reports on surveys should be sent to both administrator and chief of staff of hospital.

"11. Surveyors should be directly employed and supervised by the Joint Commission.

"12. Surveyors should work with both administrator and staff.

"13. New surveyors should receive better indoctrination.

"14. Blue Cross and other associations should be requested not to suspend full benefits to non-accredited hospitals until those so requesting have been inspected.

"15. The American Medical Association should conduct an educational campaign for doctors relative to the functions and operations of the Joint Commission.

"16. The Committee also suggests that the American Medical Association and the American Hospital Association encourage educational meetings for hospital boards of trustees and administrators either on state or national levels to acquaint these bodies with the functions of accreditation.

"17. This Committee asks to be discharged upon submission of this report to the House of Delegates."

The House also approved a reference com-

mittee suggestion that the following statement be added to strengthen the report:

"The Committee recommends that the commissioners to the Joint Commission on Accreditation of Hospitals, appointed by the Board of Trustees of the American Medical Association, urge that Commission to study:

"1. The problems of the exclusion from hospitals and arbitrary limitation of the hospital privileges of the general practitioner, and

"2. Methods whereby the following stated principles may be achieved:

" 'The privileges of each member of the medical staff shall be determined on the basis of professional qualifications and demonstrated ability.'

" 'Personnel of each service or department shall be qualified by training and demonstrated competence, and shall be granted privileges commensurate with their individual abilities.' "

Graduates of Foreign Medical Schools

The House of Delegates approved in principle a program for the evaluation of graduates of foreign medical schools seeking hospital positions in the United States. The proposed program was developed by the Cooperating Committee on Graduates of Foreign Medical Schools, representing the A.M.A. Council on Medical Education and Hospitals, American Hospital Association, Association of American Medical Colleges and Federation of State Medical Boards of the United States.

The following principles were emphasized by the Council on Medical Education and Hospitals in its report recommending A.M.A. participation in the program.

"1. Although the responsibility to share educational opportunities in medicine is recognized, the primary concern must be for the health care of the American public. Thus, before assuming responsibility for the care of patients as interns or residents, all graduates of foreign medical schools (immigrants, exchange students and American graduates of foreign medical schools) should give evidence, as nearly as can be measured, of having reached a level of educational attainment comparable to that of students in American schools at the time of graduation.

"2. The primary objective of this Committee is to devise an effective mechanism for measuring educational attainment in the absence of

intimate and continuing knowledge of the educational background of foreign-trained physicians. This mechanism should provide hospitals with pertinent information regarding the medical qualifications of foreign-trained physicians seeking positions as interns or residents. It should not interfere with the hospital's privilege of making its own selection among qualified physicians, nor should it serve as a substitute for or interfere with the normal licensure procedures of the various state boards.

"3. It is not intended that this mechanism be applicable to those foreign medical school graduates in this country as temporary students participating in programs of medical and related studies in recognized universities, medical schools and postgraduate schools, who by the very nature of their study are not involved in the responsibility of patient care."

The proposed plan calls for establishment of a central administrative organization to evaluate the medical credentials of foreign trained physicians desiring to serve as interns or residents in American hospitals. Basic requirements would include satisfactory evidence of at least 18 years of total formal education, including a minimum of 32 months in medicine exclusive of any time which in this country would be considered as premedical study or internship. Applicants with satisfactory credentials then would take a screening examination to determine their medical knowledge and their facility with the English language. Successful applicants then would be certified to hospitals and other interested organizations, with the approval of the foreign-trained physician concerned.

Private Practice by Medical School Faculty Members

Another major action by the House involved the problem of private practice by medical school faculty members, which has been under study by the Committee on Medical and Related Facilities of the Council on Medical Service. The House adopted a Council report which stated "that it shall be the policy of the American Medical Association that funds received from the private practice of medicine by salaried members of the clinical faculty of the medical school or hospital should not accrue to the general budget of the institution and that the initial disposition of fees for medical service from paying patients should be under the direct



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control of the doctor or doctors rendering the service."

It was further recommended that adequate liaison be developed and maintained between each county medical society and any medical school or schools in its area; that the Council on Medical Education and Hospitals and the Association of American Medical Colleges urge all medical schools to assist and work with medical societies in developing such liaison, and publicity emanating from a medical school should be in good taste and of a type which has the approval of the general medical community in that area.

The adopted report also said: "It is not in the public or professional interest for a third party to derive a profit from payment received for medical services, nor is it in the public or professional interest for a third party to intervene in the physician-patient relationship."

Federal Aid to Medical Schools

One of the most controversial subjects of debate on the floor of the House was a resolution expressing strong opposition to S. 1323, a bill in Congress providing for one-time, matching grants to medical schools for construction purposes. The Association in recent years has been supporting such legislation in principle, with certain reservations concerning details of some provisions. The House reaffirmed that policy by approving a reference committee statement which said:

"We appreciate the intent with which this resolution was introduced, but at the same time we feel that there are many economic and geographical factors involved, which might not make this resolution practical on a national level. Inasmuch as no evidence was offered to this Committee to justify a change in the previously declared policy of the House of Delegates, your Committee recommends that this resolution be not adopted."

Premature Drug Publicity

The House adopted a substitute resolution which read:

"Whereas, In recent years, events have indicated the necessity for a closer liaison between the pharmaceutical manufacturer and the American Medical Association; and

"Whereas, In view of the tremendous number of new drugs being developed and the expanding research programs in medical colleges, clinics

and hospitals being financed by the drug industry, it is imperative that the manufacturer and the medical profession develop cooperatively guiding principles which will protect the American people from being subjected to the premature release of information pertaining to new products or techniques; and

"Whereas, Competition within the pharmaceutical industry has become extremely keen so that in the advertising of their drug products manufacturing firms have been forced into the expenditure of larger and larger sums of money and in increasingly broader fields of advertising; therefore be it.

"Resolved, That the Board of Trustees of the American Medical Association appoint a liaison committee to meet with representatives of the pharmaceutical manufacturers to accomplish this objective."

Miscellaneous Actions

Among many other actions on a wide variety of subjects, the House also:

Approved a Board of Trustees statement on Social Security which included the following: "It is imperative that we distinguish clearly between this problem of coverage of physicians and the far more dangerous disability proposal. The fact should be recognized that the shape of medical practice in the future is not directly related to the inclusion or exclusion of physicians under OASI. It is a matter of vital importance to us as individuals, but it cannot, per se, stimulate further governmental intrusion into medical care. On the other hand, the disability amendment obviously brings the Social Security Administration closer to the regulation of medical care than ever before."

Adopted a resolution amending the By-laws to provide that the Vice President, Treasurer, Speaker and Vice Speaker of the House of Delegates shall be ex officio members of the Board of Trustees with all the rights and duties of the Board without the right to vote.

Increased membership of the Council on Medical Service from six to nine active or service members and eliminated all ex officio members except the immediate Past President.

Directed the Council on Medical Service and the Council on Industrial Health to reconsider the "Guiding Principles for Evaluating Management and Union Health Centers" through their joint Committee on Medical Care for Industrial

Workers and to so revise the guides that they conform completely with the Principles of Medical Ethics.

Authorized the Committee on Federal Medical Services to make a continuing study of all aspects of VA medical activities under the basic policy established in June, 1953, and suggested reconsideration of the temporary exceptions made at that time with respect to neuropsychiatric and tuberculosis disorders.

Recommended that the Board of Trustees select New York City as the place of the 1961 annual meeting.

Medical Ethics

Perhaps one of the most important matters of business considered by the House of Delegates was the proposed NEW PRINCIPLES OF MEDICAL ETHICS. The material was prepared and submitted by the Council on Constitution and Bylaws of the A.M.A. The Council on Constitution and Bylaws had the cooperation and approval of the Judicial Council.

The reference committee approved the material and recommended that the House of Delegates take action at the next session of the House of Delegates.

For your information and consideration, the proposed new condensed PRINCIPLES OF MEDICAL ETHICS follow. (The present "Principles" cover 48 sections and are spread over eight chapters.)

Preamble

These principles are intended to serve physicians, individually or collectively, as a guide to ethical conduct. They are not laws; rather they are standards by which a physician may determine the propriety of his own conduct. They are intended to aid physicians, in their relationships with patients, with colleagues, with members of allied professions and with the public, to maintain under God, as they have through the ages, the highest standards.

Section 1. The prime objective of the medical profession is to render service to humanity with full respect for both the dignity of man and the rights of patients. Physicians must merit the confidence of those entrusted to their care, rendering to each a full measure of service and devotion.

Section 2. Physicians should strive to improve medical knowledge and skill, and should make available the benefits of their professional attainments.

Section 3. A physician should not base his practice on an exclusive dogma or a sectarian system, nor should he associate voluntarily with those who indulge in such practices.

Section 4. The medical profession must be safeguarded against members deficient in moral character and professional competence. Physicians should observe all laws, uphold the dignity and honor of the profession and accept its self-imposed disciplines. They should expose, without hesitation, illegal or unethical conduct of fellow members of the profession.

Section 5. Except in emergencies, a physician may choose whom he will serve. Having undertaken the care of a patient, the physician may not neglect him. Unless he has been discharged, he may discontinue his services only after having given adequate notice. He should not solicit patients.

Section 6. A physician should not dispose of his services under terms or conditions which will interfere with or impair the free and complete exercise of his independent medical judgment and skill or cause deterioration of the quality of medical care.

Section 7. In the practice of medicine a physician should limit the source of his professional income to medical services actually rendered by him to his patient.

Section 8. A physician should seek consultation in doubtful or difficult cases, upon request or when it appears that the quality of medical service may be enhanced thereby.

Section 9. Confidences entrusted to physicians or deficiencies observed in the disposition or character of patients, during the course of medical attendance, should not be revealed except as required by law or unless it becomes necessary in order to protect the health and welfare of the individual or the community.

Section 10. The responsibilities of the physician extend not only to the individual but also to society and demand his cooperation and participation in activities which have as their objective the improvement of the health and welfare of the individual and the community.

Thus "The Principles of Medical Ethics" of the American Medical Association, upon which rest the conduct of physicians throughout this country, and perhaps the world, could become "The Ten Commandments of Medicine."

If these new PRINCIPLES are adopted by the House of Delegates, their brevity makes it

possible that they and the age-old Oath of Hypocrates could hang on the wall of physicians' offices together. They would be a daily reminder of the ideology, the concept of ethics, the framework under which all physicians strive to better themselves and the honored profession which they have chosen.

Opening Session

At the Monday opening session Dr. Elmer Hess, outgoing A.M.A. President, warned that the medical profession must be prepared to face an all-out drive by some labor groups for national compulsory health insurance. Dr. Dwight H. Murray, then President-Elect, told the House that general practitioners and specialists must guard against "any cleavage within our profession," and he urged strength through unity.

Dr. Lowell T. Coggeshall, special assistant to Secretary Marion B. Folsom of the U. S. Department of Health, Education and Welfare, assured the House that the over-all medical objectives of HEW are in accord with those of the A.M.A. A memorial plaque honoring the late Dr. Carl M. Peterson, secretary for 17 years of the A.M.A. Council on Industrial Health, was presented by Dr. Ross McIntire on behalf of the President's Committee on Employment of the Physically Handicapped. The Illinois State Medical Society presented a check for \$164,940 to the American Medical Education Foundation.

Inaugural Program

Dr. Murray, in his inaugural address at the Tuesday evening ceremony in the Chicago Civic Opera House, declared that "what we need most in medicine today is to find some way of combining modern scientific methods with the personal, friendly touch of the old-time family doctor." The inaugural program, which included the Bluejacket Choir of the U. S. Naval Training Center at Great Lakes, Ill., was telecast over Station WBKB in Chicago.

Election of Officers

In addition to Dr. Allman, the new President-Elect, the following officers were elected:

Dr. F. S. Crockett of Lafayette, Ind., Vice President; Dr. George F. Lull of Chicago, Secretary; Dr. J. J. Moore of Chicago, Treasurer; Dr. E. Vincent Askey of Los Angeles, Speaker, and Dr. Louis Orr of Orlando, Fla., Vice Speaker.

Dr. Julian Price of Florence, S. C., was re-elected to the Board of Trustees, and Dr. Hugh Hussey of Washington, D. C., was named to succeed Dr. Allman. Dr. Robertson Ward of San Francisco was elected to the Judicial Council to succeed Dr. Walter F. Donaldson.

Reelected to the Council on Medical Education and Hospitals were Dr. Guy A. Caldwell of New Orleans and Dr. John W. Cline of San Francisco. Dr. Walter E. Vest of Huntington, W. Va., was named to succeed Dr. Louis A. Buie on the Council on Constitution and By-laws.

Elected to the Council on Medical Service were Dr. Carlton Wertz of Buffalo, N. Y., to succeed himself, and Dr. J. F. Burton of Oklahoma City to succeed the late Dr. A. C. Scott, Jr. of Texas. Named for the three new places created on the Council on Medical Service were Dr. Thomas Danaher of Torrington, Conn.; Dr. R. M. McKeown of Coos Bay, Ore., and Dr. Lafe Ludwig of Los Angeles.

Respectfully submitted, J. D. Hamer, M.D.
Delegate to the A.M.A.

Phoenix, Arizona, June 23, 1956



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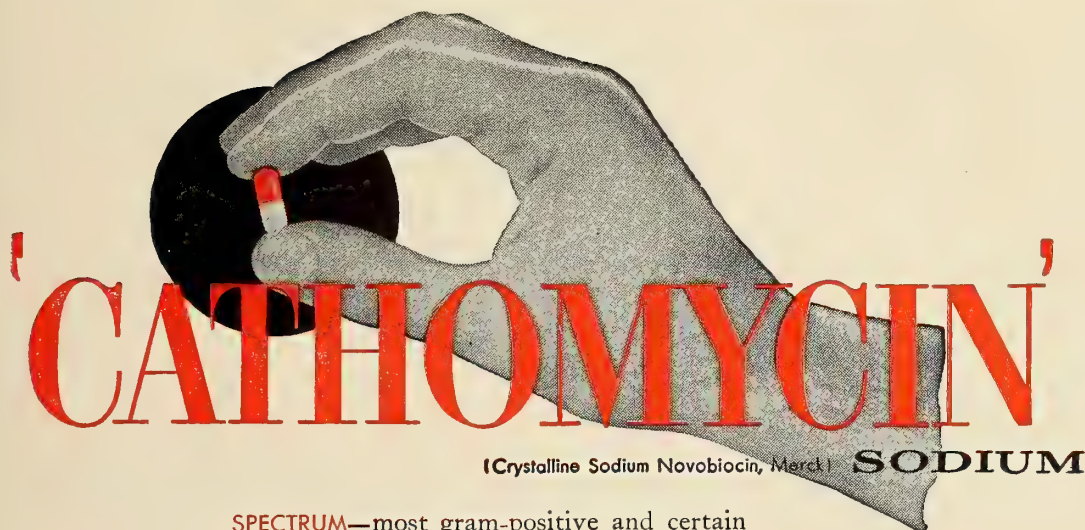
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BENSON, VICTOR GORDON, 407 16th Street, Yuma, Arizona.

BLINDE, OSCAR JOHN, Craig Hill, Ellensburg, Washington.

BOYD, JAMES WALLACE, 38 Westwood, Adrian, Michigan.

BULLINGTON, Robert Heyburn, 550 West Thomas Road, Phoenix, Arizona.

CROUCH, WARNER LATTA, 117 East Coronada, Santa Fe, N. M.

FITTIPOLDI, JR., JOHN, 3834 North 32nd Place, Phoenix, Arizona.

GEEVER, ERNEST DAN, 539 S. Hassayampa Dr., Prescott, Arizona.

GRECO, ROBERT, Morgantown, West Virginia.

HANSON, KENT OSCAR, Maricopa County Hospital, Phoenix, Arizona.

HOLSEY, WILLIAM F., 118-27 179th St., St. Albans, N. Y.

LINSLEY, LANCELOT EDWARD, 2491 Bainbridge, Eureka, California.

MOORE, LOUIS STONE, St. Joseph's Hospital, Phoenix, Arizona.

MUNHALL, HERBERT NICHOLAS, V. A. Hospital, Phoenix, Arizona.

ROADS, JOHN HORACE, 807 San Miguel, Phoenix, Arizona.

RUPPENTHAL, ARMOND J., 945 N. 12th Street, Milwaukee, Wis.

SPAULDING, RAYMOND CHARLES, 2430 East Sixth Street, Tucson, Arizona.

SPEELMAN, MERRILL EUGENE, Willcox, Arizona.

TUCHLER, MAIER I., 3020 Clay Street, San Francisco, California.

VIGIL, FRANK JOE, 102 West Merrell Street, Phoenix, Arizona.

VIVIAN, JOHN MARSHALL, 550 West Thomas Road, Phoenix, Arizona.

WILSON, LELAND BLAINE, 2250 Fairfield, Eureka, California.

WILSON, RICHARD VICTOR, 1603 N. Tucson Boulevard, Tucson, Arizona.

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Organization PAGE

CIVICS — Norman Ross, M.D.

A MEDICAL COLLEGE IN ARIZONA!

There are eighty-six prime medical centers in the United States. The State of Illinois has one of these — Chicago. The State of Arizona has two such areas — Phoenix and Tucson. Our authority, Distribution of Physicians by Medical Service Areas, Bulletin No. 94, American Medical Association, Chapter 2, Page 19.

Arizona physicians with a program — Arizona educators with college curriculum adjustment — our State with organization — can have two medical schools in this day of desperate need of physicians. Let's be conservative and allow five years for the development of the first two years of this — **A Medical College in Arizona.**

In Maricopa County in 1945, the Maricopa County Medical Society Charities staffed Memorial Hospital and proved the local physicians' willingness and academic accomplishments by obtaining American Medical Association accrediting for advanced medical training in that institution. This was accomplished in one year.

Maricopa County physicians in 1951-1952 obtained American Medical Association accrediting at Maricopa County General Hospital for intern training and residency in general practice, and for two years of specialty training in surgery from "the College." Our large general local private hospital staffs are accredited.

Identical medical activities have resulted in accrediting for the Tucson hospital staffs. All of this is the result of organized groups within the framework of the Arizona State Medical Society and the local county medical societies.

In each of Arizona's populous areas, prime medical centers, there are well staffed activities that organized medicine, nationally, has recognized.

Leaders of industry and government — the group that organized and developed industry — the group that coordinated industry to government — are now decentralizing industry. They are, with the approaching accomplishment of their program, turning to a review of the nation's physician shortage. We suggest you read: "Every Other Bed" by Mike Gorman.

Medico-social activity of organized medicine in Washington and of the physician locally is reviewed in this book. Medicine's tradition, its schools, its behavior, its attitude toward a broad social program is presented and measured in **terms of public need — of national welfare and security.** Here is a call to appreciate values, to recognize adequate medical care, not only as a local, but a state and national problem.

The fact that medical schools are understaffed, that state institutions and programs are **begging for physicians**, in the face of over-supply and a huge reservoir of prepared, dedicated pre-medic students — who are waiting for admission to medical school — with many who may never hope to gain acceptance, is considered proof of the inadequacy of the present medical education concept and program.

Present means of selection and education in our medical educational programs under the guise of "the need to produce superior doctors," the finest local doctors, presents the prospect of continued scarcity — of few doctors — and for many Americans, but **not for want of money**, little or no medical care.

Here is a demand for medical educational definition and program, for speeding up of medical training, for new colleges in areas of plenty of qualified physicians. These men who have been faced with the problem of organizing and dispersing industry will see a need for the organizing and dispersing of educational facilities in medicine and in allied fields of health.

Arizona physicians can look to coming out of their respective private shells. They can take a just pride in their academic preparation and their social potential, in the quality of their colleagues.

Our state representatives and each of the 48 governors will welcome medical leadership. No political figure — Democrat or Republican — could object to the initiation of medical educational programs or facilities by men of medicine.

Arizona physicians will look to the need for medical care. We will act in the public interest. Arizona will accomplish two years of one medical college by 1961.

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Woman's AUXILIARY

WOMEN'S AUXILIARY TO THE ARIZONA STATE MEDICAL ASSOCIATION

I. As President of the Women's Auxiliary to The Arizona State Medical Association, I wish to report the following activities for the year 1955-56.

1. American Medical Education Foundation.

All county auxiliaries have been made aware of the importance of the American Medical Education Foundation. Each county has worked hard to increase their contributions to this fund, within their own groups. The sum of \$375.00 was raised throughout the state. All auxiliary members have been informed and urged to work on the special project of the Women's Division of the National Fund for Medical Education during Medical Education Week, April 22nd - 28th.

Subscriptions to the "80 Dimes Campaign" are to be solicited from lay persons and each member has been asked to seek at least one subscription. All auxiliaries have been asked to assist their county societies in handling publicity during Medical Education Week.

2. To-Day's Health

To date 599 subscriptions of To-Day's Health have been sold.

3. Bulletin

Each county and state officer has been urged to subscribe to "The Bulletin." Forty-four subscriptions have been bought in the state.

II. State Auxiliary Activities.

1. Program

Interesting and educational programs were planned around the theme "Active Leadership in Community Health." Program chairmen were urged to give a place to each committee chairmen on the program some time during the year. Civil Defense, Nurse and Allied Medical Services Recruitment, Mental Health and Legislation, were some of the most popular programs.

The report of the Conference of Presidents and President-Elects was given to all organized counties, and one unorganized county,

during the year. The president and president-elect felt that giving this personally was immensely important in bringing out better relations between the state and county organizations. A school of instruction for all incoming officers and committee chairmen was held during the state convention.

2. Public Relations

In public relations this year we were concerned with services to the communities in health. All counties participated in some form of health service. A radio health program was sponsored by one auxiliary, and two auxiliaries conducted audiometer tests, in public, county, and parochial schools. Two auxiliaries sponsored nurse recruitment, cancer, polio and To-Day's Health booths at their respective county fairs.

3. Community Service and Philanthropic Work

Each county participated in local solicitation of funds for service organizations such as Red Cross, March of Dimes, Cerebral Palsy. The Community Hospital in Prescott received over \$4,000 from a charity ball sponsored by the Yavapai County Auxiliary. Maricopa raised over \$1600.00 from a rummage sale. Of this sum, \$1200.00 was given to the Child Guidance Clinic, and \$175.00 to the Visiting Nurse Service. Direct donations of cash, food and gifts were made to individuals or organizations at Christmastime. Pima County secured a TV set for the County Hospital, and renewed subscriptions to magazines and newspapers. Six one-year subscriptions of To-Day's Health were given by one county to mothers with babies born on or near holidays. Many doctor's wives all over the state are members of hospital auxiliaries. This active participation in civic affairs is not only our obligation as doctor's wives, but as responsible citizens and members of our community.

4. Legislation.

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References: 1. Hollander, J. L., *Ann. New York Acad. Sc.* **61**:511, May 27, 1955.

2. Hollander, J. L., et al. *J.A.M.A.* **158**:476, June 11, 1955.



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Auxiliary has been successfully laying the ground work for intelligent and effective participation in legislative efforts on a national scale. The Pima County Auxiliary assisted the Pima County Medical Society in securing a legislative expert and consultant, Dr. Marjorie Shearon. A schedule was planned for a whole week of speaking engagements for her in November. One talk was open to the public on the University Campus. Through the week, Dr. Shearon spoke before groups sponsored by dentists, pharmacists, and two Service Clubs. In Phoenix she spoke to a section of lay people, doctors, and auxiliary members. Every organized society had equal opportunity to engage the speaker. In January legislative letters were composed and sent from the Society's office, informing the membership about H.R. 7225 and its medical implications. This letter urged all doctors to write their Senators. The response to the request for letters was extremely good. We feel that this project accomplished what the Women's Auxiliary to the A.M.A. had earlier expressed the hope it would, namely:

- a. An informed membership
- b. Intelligent cooperation and consultation with our Medical Societies, and
- c. An enlightened public.

As further evidence that much interest was aroused on the subject of Social Security, one of the local newspapers has carried a question and answer on Social Security, running two columns side by side, giving answers by a Mr. David of the Dept. of Health, Education and Welfare, and Dr. Marjorie Shearon. The questions asked were formulated by a citizen's group which in turn presented them to the editor of the local newspaper who sent them to the Dept. of Health Education and Welfare and Dr. Shearon for replies. These questions and answers, plus the letters to the editors certainly helped to inform the public.

5. Funds

Eight girls received loans from the Nurses Loan Fund this year. Two girls took partial loans of \$200.00 each, while six had full loans of \$400.00 each. Six girls enrolled at Good Samaritan School of Nursing, one in St. Joseph's and one in St. Mary's School. This year the Arizona Medical Association granted the Auxiliary an additional \$800.00 in order to finance the large number of qualifying ap-

plicants for our Loan Fund. An anonymous gift of \$400.00 was also received. To date, thirty girls have taken advantage of our Loan Fund and have used funds amounting to \$8,300.00.

6. Publications

Each month articles have appeared in "Arizona Medicine." These articles written by state chairmen of the auxiliary, gave information about different phases of our program. Reports of The National Convention and Presidents and President-Elects Conference were also published. Two issues of "The Mail Box" were sent to every doctor's wife in the state, and to the editor of each state auxiliary. Over 800 copies per issue were distributed this year.

7. Organization.

Arizona has 5 organized counties with a total membership of 531, out of a possible 909 members. Members-at-large showed a 100% gain in membership. Fifty-one paid dues, this year. At convention this group was given recognition for the work they did in their own communities. One member, as chairman, gave their report.

8. Auxiliary Records

All reports of state officers, state committee chairmen, and county presidents are filed annually at the State Medical Association Headquarters.

III. ACTIVITIES JOINTLY WITH OTHER ORGANIZATIONS.

A. Nurse and Other Medical Services Recruitment

Working closely with the Joint Committee on Careers in Nursing, which is made up of three members of the Medical Auxiliary, the Arizona Nurses Association, Association of Student Nurses, and the Nursing League, plans were laid for an over-all nurse recruitment program in the state. The District Presidents and Nurses worked with auxiliary members in each county, and the Careers Committee served in an advisory capacity and as distribution center for films and materials.

In November this committee maintained a Recruitment Booth at the State Fair; Maricopa Auxiliary helped staff the registration booth for the Mobile Chest X-Ray Unit, and also assisted in the transportation for the students who worked in the booth on Nursing Careers. Cost of this booth was shared by the Careers in Nursing Committee. Cost to the auxiliary was



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\$106.00. To-Day's Health was also given to interested spectators. Governor Ernest W. McFarland proclaimed the week of February 5th - 11th as "Nurse Recruitment Week." All training schools in Arizona held open house to girls interested in nursing. Many auxiliary members drove girls from outlying districts to the nursing schools. Over 106 girls attended open house at St. Mary's in Tucson.

The Maricopa County Recruitment Committee has carried out a very extensive program of recruitment for Allied Medical Services, including nursing, professional and practical, medical technology, X-Ray technique, dietetics, physical therapy, occupational therapy, medical records, and medical social work. The program was organized into a panel of speakers, one for each profession, who would speak ten to fifteen minutes. Each school in the area was notified and a convenient time arranged for the panel to appear. At least thirteen schools will have been visited by the end of the year.

A film of these allied medical services was made by the Maricopa Auxiliary to be used in some of the schools. This film was so outstanding that the National Association of Social Workers had a copy of the film made for their use. This committee also compiled a pamphlet including information regarding each career. It included prerequisites, training program, salary range, and places in the Southwest where training can be obtained. This pamphlet will be published by the National Association of Social Workers and distributed to all medical auxiliaries in the country as a guide.

One of the big projects of the Pima County Committee was to hold a fashion show of student nurse uniforms past and present, showing uniforms and giving information on these schools and about nurses training in general.

Mrs. Pearl Coulter, from the University of Colorado School of Nursing, was honored at a tea during the State League of Nursing Convention. Students, parents and councilors attended to gain information about collegiate schools for nurses.

In Arizona 11 Future Nurses Clubs are established with 2 more to be organized when the 2 new high schools are opened.

B. Mental Health

Considerable activity has developed this year in Arizona, both financially and educationally. One auxiliary gave \$1200.00 for the benefit of

The Child Guidance Clinic, and another auxiliary purchased 1,000 booklets for lay distribution during Mental Health Week. Films, "Search for Sanity" and "We The Mentally Ill" were shown during Mental Health Week. Another auxiliary sponsored a panel discussion by Junior High Students concerning group and personal problems pertinent to their age group.

Individual auxiliary members are represented on the Boards of:

1. Arizona Association for Mental Health
2. Maricopa and Pima County Associations for Mental Health.
3. Phoenix and Tucson Child Guidance Clinics.
- C. Civil Defense

The object in Civil Defense has been a survey of the protected homes of auxiliary members in each county. Four organized counties reported a grand total of 106% participation, making the state percentage 40% (combining homes prepared and membership enlisted in Civil Defense activities). Six members in one auxiliary are active in the Ground Observer Corps.

D. Home Safety and Accident Prevention

One County assisted the State Safety Council on S-D Day.

It has been an honor and pleasure to serve as president of The Women's Auxiliary to the Arizona State Medical Association. I wish to thank all my officers and committee chairmen for their splendid work and loyal support; the national officers for their guidance; and the central office for its assistance.

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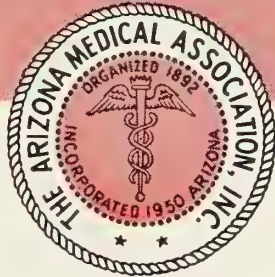
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VOL. 13, NO. 8



AUGUST, 1956

TABLE OF CONTENTS

| | |
|--------------------------|-----|
| OFFICERS DIRECTORY | 28A |
|--------------------------|-----|

ORIGINAL ARTICLES

| | |
|---|-----|
| THE MANAGEMENT OF THE SEVERELY BURNED | 305 |
| Chas. W. McLaughlin, Jr., M.D., Omaha, Nebraska | |
| CANCER IMMUNITY IN THE NAVAJO | 309 |
| C. G. Salsbury, M.D., Phoenix, Arizona | |
| INTESTINAL OBSTRUCTION | 311 |
| James J. Berens, M.D. | |

MEDICAL PROBLEMS

| | |
|---|-----|
| PHOENIX CLINICAL CLUB | 314 |
| Lloyd K. Swasey, M.D., Phoenix, Arizona | |

THE PRESIDENT'S PAGE

| | |
|--|-----|
| THE DOCTOR | 322 |
| A. I. Podolsky, M.D., President, Arizona Medical Association | |

EDITORIAL

| | |
|----------------------------------|-----|
| WIDEN YOUR CIVIC INTERESTS | 323 |
|----------------------------------|-----|

TOPICS OF CURRENT MEDICAL INTEREST

| | |
|---|-----------|
| RX., DX., AND DRS. | 324 |
| Guillermo Osler, M.D. | |
| RESOLUTIONS | 328 |
| ORGANIZATION PAGE — Civics | 332 |
| Norman A. Ross, M.D. | |
| EVALUATION OF THE FOREIGN MEDICAL SCHOOL GRADUATE | 334 |
| NOTES FROM THE DESK OF THE EXECUTIVE SECRETARY | 335 |
| NATIONAL DISEASE & THERAPEUTIC INDEX ISSUES | 336 |
| NOTICES | 337 & 342 |
| LOCATION OPPORTUNITIES | 338 |
| MEETING NOTES | 340 |
| REVOLVING ASSISTANCE FUND | 340 |

WOMAN'S AUXILIARY

| | |
|---|-----|
| WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION | 344 |
|---|-----|

DIRECTORY

| | |
|----------------------------|-----|
| LABORATORIES | 29A |
| DRUGGISTS DIRECTORY | 31A |
| SANATORIUM DIRECTORY | 32A |
| PHYSICIANS DIRECTORY | 34A |

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ARIZONA MEDICINE

Journal of Arizona Medical Association

VOL. 13, NO. 8



AUGUST, 1956

Original ARTICLES

THE MANAGEMENT OF THE SEVERELY BURNED

Chas. W. McLaughlin, Jr., M.D.*
Omaha, Nebraska

DURING the past few years and under the stimulus of the recent great war there has been a marked change in the treatment of the severely burned patient. Increasing interest and experience, together with a better appreciation of the altered physiology involved in acute burns and during the long stage of repair, have greatly improved the therapy of these individuals. It is our intention to discuss only briefly the accepted methods of treatment and the problems encountered in the acute phase of burn therapy with emphasis upon those factors which are of great importance in the convalescent period.

In civilian life severe burns are frequently seen in children and in elderly adults, while industrial and occupational hazards are responsible for most cases seen in the middle-aged group. Inflammable liquids head the list of causes of burns and this is especially true in children. Hot liquids, especially hot water, are frequently seen as the cause of burns in infants. Electrical and chemical burns occasionally seen in industry are not often encountered in civilian practice. In the agricultural areas of the country burns occur frequently in the small communities and on the farms. The use of petroleum products in starting fires and the refueling of tractors in the field are responsible for the majority of severe burns in these sections.

The emergency treatment of a severe burn is mainly supportive in character and should be directed toward a rapid mobilization of the

patient and admission to a hospital where material for adequate treatment is available. Emergency treatment consists of draping the patient in clean sheets or similar covering, allaying the pain and giving first aid to associated injuries so that the patient may be safely transported. It is not advisable to start any definitive treatment of the burn at the site of injury.

In industry and those areas where the occupational risk of burns is constantly present it would seem advisable to have burn packs containing sterile sheets, morphine and plasma available in designated sites for use when necessary.

When the patient is brought into the hospital he should be taken immediately to an operating room for definite treatment. There is no place in the admitting room or ward for the proper dressing of a severe burn. The diagnosis is usually evident and frequently information as to the arrival of a burn has preceded the patient so there should be no reason for attempts at treatment where aseptic handling is impossible. Every second and third degree burn represents an open wound devoid of its protective layer and open to contamination and infection. It is in the operating room where the personnel are trained and the best methods of asepsis of treatment should be undertaken.

In the care of the acute burn there are many phases of applied physiology which must be considered in instituting good treatment. The initial therapy administered during the first few hours often determines the eventual outcome of the severe burn.

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Immediately following a burn injury there is intense pain which may be partially controlled by morphine. While this pain does not seem to be as important a factor in the production of shock as was previously thought, it is essential that the patient be made as comfortable as possible. Intravenous morphine has proved its value as the method of administration because of its rapid action. These patients are often cold or in shock with a poor peripheral circulation. This results in delayed absorption of the drug as ordinarily administered and may ultimately lead to overdosage through repeating the medication. We use one-sixth to one-fourth grain of morphine as an initial dose in adults if no cyanosis is present, keeping in mind that oversedation should be avoided. If the patient continues to complain of pain and discomfort, morphine or its derivatives may be safely repeated at intervals if the intravenous injection route is used.

The shock accompanying burns has been the subject of many studies during recent years and it is not within the scope of this paper to discuss this phase in detail. Burn shock is apparently a syndrome caused by loss of plasma from large denuded areas of the skin. This causes a low plasma volume, low cardiac output, low blood pressure and an increased peripheral resistance to the blood flow.

There is an accompanying hemolysis and decrease in the red cell mass which is constantly found following an acute burn. There have been several explanations for this loss. That there is a destruction of the red blood cells by heating and resulting liberation of potassium and hemoglobin was demonstrated as early as 1884 by Von Schjerning, and later research pointed out that there are toxic effects of the excessive potassium in the circulation.

There is also another factor responsible for the decrease in the red blood cell mass noted by Evans and Bigger. They described a sludging and trapping of red blood cells in the capillaries adjoining and in the burned tissues. These investigators reviewed the blood loss in nine acute burns and estimated that from 1200 to 2500 cc. or 25 to 50 percent of the circulating blood had been lost. In all of their studies the red blood cell mass loss varied from 5 to 55 percent with an average of 37 percent.

In the treatment of shock accompanying severe burns, the main problem is to replace

the fluid loss and to restore the altered physiology of the circulation. This treatment can be started with intravenous electrolyte solutions using sodium chloride or 5 percent glucose in sodium chloride. The improvement in the blood pressure and pulse resulting from the use of these solutions however is only transitory and lost within an hour or so. Plasma is the solution of choice and should be administered as soon as available. There are three forms of plasma: the liquid, the frozen, and the dehydrated or desiccated, and one of these is almost always available in a modern hospital.

Plasma is stable and has a very low immediate instance of reaction. There are several formulas for the administration of plasma in the severe burn, the most common of these being (1) 100 cc's of plasma for each one percent of body surface burned, (2) 100 cc's of plasma for each point the hematocrit is above 45, (3) 700 cc's for the first 24 hours for each estimated 10 percent of the body surface burned, (4) 500 cc's for each point the hemoglobin is above 100 percent.

Whole blood should be administered as soon as it can be obtained. Its administration prevents shock and controls the anemia observed as shock comes under control. Blood has the advantage of formed elements and protein that aid in maintaining the pressure as well as restoring red blood cell and protein levels. A workable rule is to administer 500 cc's of whole blood each day for three days and subsequently transfuse as indicated by the blood picture.

Electrolyte solutions by mouth have proved effective in combating the burn shock. Sodium chloride solutions administered orally have reduced the mortality of the burn shock syndrome and the isotonic solutions have shown better results than the hypertonic solutions.

Moyer and his associates demonstrated that a combination of blood by vein with normal saline and sodium bicarbonate by mouth was the most effective method of controlling the burn shock syndrome. The correction of electrolyte and blood loss beyond those not replaced by transfusions can safely be accomplished by the oral route as soon as nausea and vomiting resulting from the delayed gastric motility are controlled.

It is now a well accepted practice to administer a mixture of isotonic sodium lactate and sodium bicarbonate or a mixture of isotonic

sodium chloride and bicarbonate orally by means of an intragastric tube. The amount of the electrolyte solution necessary depends on several factors and varies from three to five liters during the first 24 hours and from two to three liters during the second 24 hours as tolerated. These amounts should not be arbitrary. They are determined by the patient's response to the blood plasma and electrolyte administration and by the urinary output.

Local Care Of The Burn

At the present time there are two accepted methods of caring for the burned area employing either pressure dressings or the exposure method. As soon as initial shock is overcome with the administration of indicated fluids, care should be directed toward the management of the open burn. We prefer pressure dressings for all circumvential burns of the trunk and particularly for the forearms, hands, and feet but we certainly do recognize the value of the exposure method in selected cases.

In dressing the burn after removing the original tentative dressing a rough estimate is made of the area and depth of the body surface involved. We prefer the classification of Lund and Browder. If gross contamination is present the wound is gently irrigated with adequate amounts of saline and soiled areas are gently washed with Septisol, otherwise we do not recommend profound scrubbing of the wound surface. All loose skin tabs are removed by debridement but care is taken when pressure dressings are to be employed not to rupture blisters which are intact. For the dressing we employ 44 mesh gauze impregnated with liquid Petrolatum. These strips of gauze are applied smoothly over the burned areas after which cellulose-cotton gauze or sterile white mechanic's waste is evenly applied over these areas and the dressing held in place by wrapping firmly with stockinette cut on the bias. In applying these dressings care must be taken to distribute the pressure evenly so as not to interfere with blood supply or necrosis may result over bony prominences.

This dressing is usually left on for from five to eight days after which time the burned areas are re-inspected. If granulation tissue is clean and the patient's condition warrants, grafting is carried out immediately at the time of the first dressing, if indicated in suitable areas. At this dressing we do not hesitate to

remove any material which is necrotic and if the bleeding is not too excessive or can be controlled by hot packs, these areas may be immediately grafted. Otherwise, we apply a pressure dressing incorporating many urethral catheters for saline irrigations. We find that this latter type of dressing will aid in cleaning up infection and also speeds the separation of sloughs so that early grafting is possible.

Penicillin is routinely employed in the early phases of burn therapy and also during the stage of grafting but we are convinced that penicillin has no effect on the established infection in the granulating burn wound. All patients with burns are given tetanus toxoid or anti-toxin early as the chance of contamination with tetanus bacillus is great. As soon as the patient is able to take nutritive fluids by mouth he is started on a high protein, high carbohydrate diet with large doses of vitamins, particularly vitamin C. We emphasize the importance of constant attention to the patient's nutrition as this aids in the early grafting and the success of the graft take.

The exposure method has much to recommend it particularly in the management of burns of the face, the perineum, the buttocks and burns of the trunk when they are not circumvential. This is not a new method, having been early described by Copeland in 1887. When the exposure method is employed, no dressings are used but the patient is placed under a carefully controlled cradle, with sufficient heat for comfort, on sterile sheets. Every effort is made to keep the burned areas as dry as possible and this is best accomplished by frequent sponging during early hours with sterile compress. The usual cleansing of the burned area is indicated if there is gross contamination prior to starting this form of therapy. Locally we have not used antiseptics when employing the exposure method and infection is surprisingly infrequent if the areas can be early created to a dry state.

In general first and most second degree burns will heal without grafting if properly handled either by pressure dressings or by the exposure method. Great care **must** be taken to reduce or prevent sepsis for it is to be remembered that infection can convert a first and second degree burn into a third degree burn by loss of viable islands of epithelium.

Burns with complete loss of the skin invariably require grafting. There are burns in which

certain areas will borderline second and third degree depth and these must be observed in order to determine whether or not grafting will be necessary. Those which obviously will require grafts should have an early debridement and the wound prepared for grafts. If sufficient skin is not available on the burn subject, use of bank cadaver skin as recently emphasized by Brown offers great promise in saving the lives of some of these extensively burned individuals.

Three types of grafts may be employed for covering defects following loss of skin in burn patients. These are split grafts pinch grafts, and full thickness grafts.

True, full thickness grafts are rarely used in the treatment of burns. They can only be used in small areas and require a very good blood supply and tolerate even minor infection poorly. Pinch grafts are often utilized in seeding large non-exposed body areas when donor skin is limited or when infection is poorly controlled. As there is almost always scarring resulting from their use, they should be cut quite small, only partially through the skin and placed quite close together. Keloid is very prone to occur in these grafted wounds and the donor area invariably heals with some permanent spotted scarring.

Split thickness grafts are the most useful type in the repair of the burned area. These may be obtained with the skin graft knife, razor blades or by means of one of the various types of dermatome skin grafting instruments. The split thickness graft taken with a razor is ideal for covering large surfaces with patches when the recipient area is large and the donor area limited and to be used repeatedly as a source of skin. Machine or dermatome grafts are in reality large split thickness grafts which may be cut at any designated depth. These grafts are indicated over exposed joint surfaces and areas subject to moderate trauma such as the patella, popliteal space, axilla, elbow, and antecubital fossa. Their use in these areas is essential because of the lessening of scarring and diminished keloid tendency. The dermatome graft is used on all exposed surfaces when feasible because of the better cosmetic result from the large plaque of skin. When these large grafts are cut thin it is often possible to obtain further skin from the same area in from

three to six weeks after complete healing of the donor area has occurred.

Grafting may be accomplished without difficulty when pink, non-edematous, granulation tissue appears, usually five to seven days after debridement. Granulation tissue that is thick, pale, and edematous should be scraped away down to a firm yellow bed before attempting to apply grafts. The oozing from the firm vascular bed is brisk and best controlled with hot packs. Topical Thrombin in a 1:1000 solution sprayed on the oozing area through a hypodermic needle also assists in the hemostasis, and contributes greatly to the adherence of the graft. When placed, these grafts are immediately covered with carefully applied strips of 44 mesh gauze impregnated in Scarlet R or Zeroform ointment. These strips must lie absolutely flat on the grafted area and are covered by firm pressure dressing. A very successful combination is fluffed gauze held in position with ace bandages or bias cut stockinette. Too much pressure must be avoided as must any tendency for the dressings to slip.

The temptation to redress these grafted areas in four to five days should be avoided. Unless there develops infection or slough as evident by marked odor from the dressing, they should be permitted to remain in position for seven to nine days. It is desirable to do the graft redressments in the operating room under anesthesia and additional grafts may be done at the same procedure.

The general nutrition of the patient must be maintained with a high protein diet and oral protein supplement throughout this entire period of reconstructive surgery. A protein milk formula containing whole milk, powdered milk, sugar and eggs has been a very satisfactory adjunct in our hands. 500 cc. of whole blood are given at each dressing or skin graft and in addition as many transfusions between dressings as are necessary to maintain a normal blood protein, a red cell count above 4 million and a hemoglobin over 80 percent. The patient should be followed with weekly serum protein levels and red blood counts and hemoglobin determinations. Whole blood rather than iron preparations should be relied upon to maintain the hemoglobin concentrations since these may inhibit the appetite and are too slow in their effect. Vitamin C levels must be maintained in supportive therapy.

When the grafted areas have become dry it is desirable to start gentle massage with a lanolin type ointment or baby oil in order to obtain a pliable, mobile skin. In addition this seems to minimize scarring and keloid formation.

These severely burned patients present a tremendous economic problem which is resultant from prolonged hospitalization, repeated operative procedures, transfusions and medications. With modern therapy a great many burned individuals now survive the first few critical

days to enter that prolonged period when plastic repair is essential for their eventual recovery. Realizing that most of these individuals can be salvaged if a well ordered program is established for their repair, it is imperative that it be followed through under the direction of an individual or a group interested in such problems. The results more than justify the efforts and increased experience will save many more of these patients who in years past have succumbed to sepsis, cachexia and inanition.

CANCER IMMUNITY IN THE NAVAJO

C. G. Salsbury, M.D.
Phoenix, Arizona

A REVIEW of nearly 35,000 Navajo admissions to Sage Memorial Hospital at Ganado, showed only 66 diagnosed cases of malignancy of all types. In this series not a single case of breast cancer was found in a Navajo woman.

In addition to those actually admitted to the hospital, many thousands of patients were seen in the dispensary or in their hogans, but these are not taken into consideration in the accompanying table.

It is evident that there must be some reason for such a pointed difference between the rates in whites and in Navajos.

A series of many hundreds of fasting blood sugars done on Navajo patients at Sage Memorial Hospital showed that they consistently ran 20 to 30 points below those found in white patients.

In a series of 25,000 admissions to the hospital at Ganado only five diagnoses of diabetes were made.

This naturally raised the question as to

whether the Navajo diet and nutrition might have some bearing on the cancer rate. Accordingly in the summers of 1954-55 nutrition studies were carried out at Ganado and at two other much more isolated areas. The report on these studies is not yet complete and may or may not indicate that Navajo nutrition is related to the low cancer rate.

The question might be raised as to whether a considerable number of patients with cancer did not report at the various hospitals. It is extremely unlikely that any appreciable number of cases of advanced cancer would not show up at one or the other of the reservation hospitals at some time during the course of the disease.

Attached is a breakdown showing the sex, age and site of cancers found in a study of 60,000 Navajo hospital patients at Ganado and the various Indian Service hospitals on the reservation.

SEE TABLE ON PAGE 310



INDIAN HOSPITAL CANCER STUDY - NAVAJO ADMISSIONS INDICATING CANCER (UNDUPLICATED COUNT)

| | TOTAL | MALE | FEMALE | UNDER 1 | | 1-4 | | 5-9 | | 10-14 | | 15-24 | | 25-34 | | 35-44 | | 45-54 | | 55-64 | | 65-74 | | 75 & Over | |
|---|-------|------|--------|---------|---|-----|---|-----|---|-------|---|-------|---|-------|----|-------|----|-------|---|-------|---|-------|---|-----------|---|
| | | | | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F |
| Malignant Neoplasm of: | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lip | 1 | 1 | | | | | | | | | | | | | | | | | | | | 1 | | | |
| Salivary Gland | 2 | 2 | | | | | | | | 1 | | | | 1 | | | | | | | | | | | |
| Floor of Mouth | 1 | 1 | | | | | | | | | | | | | | | | | | | 1 | | | | |
| Nasopharynx | 1 | 1 | | | | | | | | | | | | | | | | | | 1 | | | | | |
| Oesophagus | 3 | | 3 | | | | | | | | | | | | | | | | | | 1 | | 2 | | |
| Stomach | 21 | 15 | 6 | | | | | | | | | | | 2 | 2 | | 3 | 2 | 2 | | | 3 | 3 | 3 | 1 |
| Small Intestine including Duodenum | 2 | | 2 | | | | | | | | | | | | | 2 | | | | | | | | | |
| Large Intestine except Rectum | 8 | 6 | 3 | | | | | | | | | | | | 3 | | 1 | 1 | 1 | | | | 2 | | |
| Rectum | 2 | 2 | | | | | | | | | | | | | | | 2 | | | | | | | | |
| Biliary Passages and of Liver (stated to be primary site) | 19 | 2 | 17 | | | | | | | | | | | | | 2 | | 4 | | 2 | | 1 | 8 | 1 | 1 |
| Liver (secondary and unspecified) | 8 | 2 | 6 | | | | | | | | | | | | | 1 | | 1 | 1 | 2 | | 1 | 2 | | |
| Pancreas | 6 | 5 | 1 | | | | | | | | | | 1 | | | | 1 | | 1 | 1 | | | | 2 | |
| Nose, Nasal Cavities, Middle Ear and Accessory Sinuses | 3 | 2 | 1 | | | | | | | | | | | | | | | 1 | | | | 1 | | 1 | |
| Trachea, and of Bronchus and Lung specified as primary | 1 | 1 | | | | | | | | | | | | | | | 1 | | | | | | | | |
| Lung and Bronchus, Unspecified as to whether primary or secondary | 4 | 3 | 1 | | | | | | | | | | | | | | | | | | | | 1 | 3 | |
| Mediastinum | 2 | 1 | 1 | | | | | | 1 | | | | | | | | | | | 1 | | | | | |
| Breast | 3 | | 3 | | | | | | | | | | | | | | | 2 | | 1 | | | | | |
| Cervix Uteri | 38 | | 38 | | | | | | | | | | | 5 | 13 | | 12 | | 5 | | | 1 | | 2 | |
| Corpus Uteri | 1 | | 1 | | | | | | | | | | | 1 | | | | | | | | | | | |
| Other parts of Uterus, including Chorion-epithelioma | 1 | | 1 | | | | | | | | | | | | | 1 | | | | | | | | | |
| Uterus, Unspecified | 9 | | 9 | | | | | | | | | 1 | 1 | 1 | 1 | | 4 | | 1 | | | | | 1 | |
| Ovary, Fallopian Tube, and Broad Ligament | 1 | | 1 | | | | | | | | | | | | | | | | | 1 | | | | | |

| | TOTAL | MALE | FEMALE | UNDER 1 | | 1-4 | | 5-9 | | 10-14 | | 15-24 | | 25-34 | | 35-44 | | 45-54 | | 55-64 | | 65-74 | | 75 & Over | |
|---|-------|------|--------|---------|---|-----|---|-----|---|-------|---|-------|---|-------|---|-------|----|-------|----|-------|----|-------|----|-----------|----|
| | | | | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F |
| Malignant Neoplasm of: | | | | | | | | | | | | | | | | | | | | | | | | | |
| Prostate | 10 | 10 | | | | | | | | | | | | | | | | | | 1 | | 4 | | 5 | |
| Testis | 2 | 2 | | | | | | | | | | | | 1 | | | | | | | | | | 1 | |
| Bladder and other Urinary Organs | 3 | 3 | | | | | | | | | | | | | | 1 | | | 2 | | | | | | |
| Malignant Melanoma of Skin | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | 1 | |
| Other Malignant Neoplasm of Skin | 14 | 5 | 9 | | | | | | | 1 | | 1 | | | | | | | | 1 | | 2 | 4 | 5 | |
| (Malignant Neoplasm of) Eye | 2 | 1 | 1 | | | | | | | | | | | | | | | 1 | 1 | | | | | | |
| Brain and Other Parts of Nervous System | 7 | 2 | 5 | | | 1 | 3 | | | | | | | 1 | | | | 1 | | 1 | | | | | |
| Bone (including Jaw Bone) | 6 | 4 | 2 | | | 1 | | | | | | 1 | 1 | | | | | 1 | 1 | 1 | | | | | |
| Connective Tissue | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Secondary and Unspecified Malignant Neoplasm of Lymph Nodes | 4 | 4 | | | | | | | | | | | | | | | | 2 | | 1 | | 1 | | | |
| Malignant Neoplasm of Other and unspecified sites | 16 | 12 | 4 | 1 | | | | | | | | | | 4 | 1 | 1 | | 2 | | 1 | | 2 | | 2 | 2 |
| Other Forms of Lymphoma (Reticulosis) | 1 | 1 | | | | | | | | 1 | | | | | | | | | | | | | | | |
| Multiple Myeloma (Plasmocytoma) | 2 | 1 | 1 | | | | | | | | | | | | | | | | | 1 | 1 | | | | |
| Leukaemia and Aleukaemia | 2 | 1 | 1 | | | | | | | | | | | 1 | | 1 | | | | | | | | | |
| TOTAL | 208 | 90 | 118 | 1 | 0 | 2 | 3 | 0 | 1 | 2 | 2 | 1 | 3 | 10 | 5 | 8 | 21 | 14 | 30 | 14 | 17 | 15 | 21 | 23 | 13 |

INTESTINAL OBSTRUCTION

James J. Berens, M.D.

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INTESTINAL obstruction refers to any hindrance to the forward motion of the intestinal contents.

In giving a diagnosis of intestinal obstruction, descriptive terms are used to help classify the type of problem at hand. Several types of classification of obstructions are helpful.

1. Location of the site of obstruction is important because the etiology, treatment and prognosis vary considerably with location.

2. Status of blood supply. Simple obstruction is present when blood supply to the bowel is intact. Strangulation denotes interference with the arterial or venous supply of the bowel wall. When strangulation complicates obstruction the statistical mortality is greatly elevated.

3. Acuteness of onset. A slowly developing obstruction often allows a certain degree of adjustment and modifies the symptom pattern. A sudden and severe onset is interpreted by some investigators to indicate a greater likelihood of the presence of strangulation.

4. Dynamic or Adynamic. Dynamic is a descriptive term indicating a mechanical obstruction, whereas adynamic or paralytic indicates a lack of peristaltic activity.

5. Mechanism of obstruction. One of the best and most used classifications is given by Wangenstein.(1)

(a.) Mechanical:

1. Narrowing of the lumen by strictures, obstructions and external compression.

2. Obstruction due to adhesions or bands.

3. Hernias.

4. Volvulus.

5. Intussusception.

6. Developmental errors.

(b) Nervous Imbalance:

1. Inhibition Ileus.

2. Spastic Ileus.

(c) Vascular Obstruction:

1. Thrombosis.

2. Embolism.

Incidence of various types of obstruction: In a ten year period at Massachusetts General Hospital 335 cases reported by McIver(2) included 44% due to strangulated external hernia, 30% due to bands and adhesions, 10% due to

neoplasm, 5% to intussusception, 4% to volvulus, 4% to mesenteric thrombosis and 4% to all other causes. This study is similar to other reported series and illustrates that about 84% of mechanical obstructions are due to hernias, adhesions and tumors. In studies limited to colon obstruction the role of neoplasms rises to about 60% and volvulus to about 20%. In infants the great majority of obstructions are due to intussusception. Also in England, Australia and Denmark intussusception is one of the most frequently observed types of obstruction. Reports from Russia indicate that volvulus accounts for over 50% of all obstructions.

Pathologic Physiology

Severe dehydration in intestinal obstruction results from vomiting, lack of fluid ingestion and absorption, and pooling of fluid in distended bowel. In the average adult the normal 24 hour volume of gastro-intestinal secretions is 8200 cc. This contrasts with a usual plasma volume of 3500 cc. Of the many liters of fluid in the gastro-intestinal secretions plus approximately two liters of ingested daily fluid, all is normally reabsorbed with the exception of a few hundred cubic centimeters which is excreted with the feces. Loss of these fluids from the body causes rapid depletion of water and electrolytes.

The level of the obstruction influences the volume and chemical composition of fluid lost through vomiting. Thus with obstruction of the first portion of the duodenum or pylorus large volumes of fluid predominating in chloride ion are lost with a resulting alkalosis. Obstructions at progressively lower levels of the intestine are not nearly as prone to result in alkalosis since the strongly alkaline secretions of the pancreas, liver and small bowel may be lost along with the acid gastric juice.

Complete obstruction of the upper intestine in dogs has been shown (Wangenstein)(1) to be fatal in 3 or 4 days. Giving parenteral saline solution can prolong the life of the dogs to over 3 weeks(3). Experimental obstruction low in the ileum of dogs produces a different clinical picture in which the loss of fluid and electrolytes plays a less important role. Usually vomiting is not prominent and the dogs remain in

apparently good condition for 7 to 9 days and then succumb rapidly. Parenteral saline does little to prolong life.

Distension of bowel is caused by the accumulation of gases and gastro-intestinal secretions. The gas in the bowel is from three sources: 1. swallowed air, 2. digestive processes, and 3. diffusion from the blood into the intestinal lumen. About 68% of intestinal gas is swallowed air, 23% diffuses from the blood and 9% arises from bacterial and digestive decomposition (Wangenstein)(1). Experimental dogs with ileal obstruction died in about 5 days whereas similarly obstructed dogs who had transection of the cervical esophagus to prevent air being swallowed lived an average of 35.2 days and in the latter group autopsy examination showed with few exceptions that the amount of gas found in the intestines was not large(4). Thus exclusion of swallowed air permitted the closed loop of esophagus, stomach and small intestine to reabsorb a great portion of the digestive juices.

Diagnosis

Although the cardinal symptoms of obstruction consisting of pain, vomiting, distension and obstipation have been stressed for generations the diagnosis still continues to be made late in many instances.

Pain is the symptom most consistently present. It is produced by increased peristaltic activity in the distended bowel proximal to the obstruction. The pain is cramp-like building up to a crescendo and not lasting more than 1 to 3 minutes before subsiding. Usually the pain is intermittent and this characteristic is important to elucidate from the patient to aid in making a diagnosis. According to Wangenstein, mechanical obstruction without intestinal colic does not exist. In advanced or strangulated obstructions the pain may be continuous.

Vomiting tends to vary with the level and the character of the obstruction. It helps in distinguishing from other acute abdominal conditions by being more frequent, copious and feculent. Vomiting tends to occur earlier the higher the site of obstruction. This symptom may be absent in colonic obstruction, particularly if the valve is competent.

Abdominal distension tends to be more prominent in lower obstructions. It is important to recall that high obstructions may exhibit little distension when the proximal bowel is readily

decompressed by emesis.

Obstipation is a well known symptom of obstruction but one should recall that a patient may have one or more apparently normal bowel movements by passage of the bowel contents distal to the obstruction.

Physical examination may disclose little or no tenderness in simple and uncomplicated obstruction. Localized tenderness, especially when accompanied by rigidity and rebound tenderness is evidence of peritoneal irritation and generally indicates that strangulation complicates the obstruction. Intussusception is one type of strangulation obstruction in which these local signs of peritoneal irritation may be absent because the irritating segment of bowel is telescoped inside a sleeve of relatively normal bowel. Examination should always include a check for presence of external hernias.

Auscultation usually discloses high pitched peristaltic rushes, bubbling, and gurgling and these signs are usually synchronous with intermittent pains.

X-ray studies provide valuable diagnostic aid in confirming the diagnosis and location of obstruction. In the normal adult the gas in the small intestine is so well mixed with the fluid that collections of gas are usually not large enough to be seen on x-ray. Visible gas in distended loops of small intestine in the adult is synonymous with intestinal stasis. The typical appearance of small bowel obstruction is a "step ladder" of dilated loops. In the ileum the volvulae coniventes are less prevalent than in the jejunum and this distinction helps to differentiate the obstruction site. In obstruction of the colon a competent ileocecal valve may prevent retrograde distension of the small intestine.

Management of intestinal obstruction must be individualized for each patient and will be discussed here in summary form. The three basic therapeutic measures consist of (1) gastro-intestinal suction, (2) administration of intravenous fluids, and (3) surgical correction.

When diagnosis is made of simple obstruction of the bowel, and strangulation or closed loop obstruction of the colon are ruled out, intestinal decompression is initiated by suction on a Miller-Abbott, Cantor or Wangenstein tube. If strangulation, closed loop obstruction or vascular occlusion are present the safest treatment is prompt surgical intervention as

soon as the patient's condition is satisfactory.

The fluid and electrolyte requirements of the patient are estimated and appropriate intravenous fluids are started to correct and maintain the electrolyte, nitrogen, vitamin and caloric balance. It is well to note that high obstructions result early in large chloride deficits and alkalosis which in late stages are followed by acidosis.

Gastro-intestinal suction tubes may be used in any patient with intestinal obstruction in whom immediate operation is not indicated or advisable. Intestinal suction should never be used as a substitute for surgical correction in patients with strangulation or with acute obstruction of the colon. If obstruction, complicated by strangulation is the diagnosis, gastro-intestinal suction and intravenous fluids are instituted and early operation is indicated.

When intestinal suction and parenteral alimentation are initiated the progress must be carefully checked at frequent intervals by physical and roentgenological examination. Frequent examinations aid in detection of indications for urgent surgical intervention. These indications are strangulation as evidenced by development of pain, fever, abdominal tenderness and leucocytosis, and distension which fails to decrease in spite of effective suction. Many patients have increased morbidity and many deaths have occurred because of false security instilled by the passage of a suction tube into the small bowel or by the time lost, when one or two days are utilized in attempting to pass a tube into the small bowel.

In paralytic ileus this non-operative treatment is the effective definitive treatment.

In simple complete obstructions due to adhesions (without strangulation) opinion varies from those who advise surgical operation on

all cases to those who feel that surgery is not necessary in the patients whose obstructions have been completely relieved by the tube. I, personally, belong to the latter school of thought, in that I prefer to utilize non-operative measures as the definitive treatment if these can successfully alleviate simple obstructions of the small intestine. I also believe quite emphatically that one is not being conservative by passing a long intestinal suction tube and thereafter fail in repeated examinations to detect the appearance of evidence indicating early strangulation.

The incision at operation should be planned whenever possible to allow the most direct approach to the site of obstruction. If the site of obstruction is not known, the ileocecal region is first inspected. When the terminal ileum is found to be collapsed the small bowel is examined in a proximal direction until the obstruction is located. If the cecum is distended the pelvic colon and then the transverse colon are palpated for the site of pathology.

The obstructed area of bowel is then evaluated for viability. If the obstruction is corrected and viability is established the bowel is usually returned to the abdomen. Non-viable small bowel is usually resected, non-viable colon is usually best treated by exteriorization.

Irremovable obstruction of the right colon can usually be best managed by ileo-transverse colostomy; that of the left colon by transverse colostomy; and that of the lower pelvic colon by sigmoid colostomy.

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PHOENIX *Clinical* CLUB

The Case History in this discussion is selected from the Case Records of the Massachusetts General Hospital, and reprinted from the New England Journal of Medicine. The discussant under Differential Diagnosis is a member of the staff of the Massachusetts General Hospital. The other discussants are members of the Phoenix Clinical Club.

MASSACHUSETTS GENERAL HOSPITAL PRESENTATION OF CASE 39122

A FIFTY-EIGHT-YEAR-OLD housewife was referred to this hospital because of pain in the neck.

Six weeks before admission the patient noted soreness and stiffness of the anterior portion of the right side of the neck but paid little attention to it. Two weeks later the left side became sore and swollen, and there was slight discomfort about the left ear. She was very lethargic and had a chilly sensation without actual shaking at night. Her physician found an enlarged thyroid gland and a temperature of 99.6 F. She was put to bed for a week and treated with aureomycin for four days, without improvement.

At no time had she noted excessive sweating or nervousness. She had lost 8 pounds during the present illness. The past history and systemic review were otherwise negative.

Physical examination revealed a well developed and well nourished woman. The thyroid gland was movable and diffusely enlarged bilaterally. The left lobe was tender; there was no bruit. The heart and lungs were normal except for a tachycardia. The liver and spleen were palpable at the costal margins and were not tender. The rest of the examination was negative.

The temperature was 98.6 F, the pulse 100, and the respirations 20. The blood pressure was 135 systolic, 80 diastolic.

The urine had a specific gravity of 1.026 and gave a positive test for albumin; the sediment contained 12 white cells and a rare hyaline cast per high-power field. Examination of the blood showed a hemoglobin of 13.4 gm. per 100 cc.

and a white-cell count of 8800, with 72 per cent neutrophils, 23 per cent lymphocytes and 5 per cent monocytes. The sedimentation rate was 47 mm. in sixty minutes. The basal metabolic rate was plus 8 per cent. The radioactive-iodine uptake was 0 per cent in forty-eight hours; the protein-bound iodine was 10.6 microgm. per 100 cc.

On the second hospital day an operation was performed.

Dr. Lloyd K. Swasey

This case furnishes, I believe, a good example of the need for the clinician to understand the newer laboratory procedures. These procedures are rather specific and are aimed at augmenting traditional clinical history, signs and symptoms. I must confess that, while wavering between a diagnosis of atypical hyperthyroidism and thyroiditis, I showed the protocol to a colleague. His terse comments aided me in my choice of a final diagnosis.

This 58 year old woman apparently was admitted because of neck pain and thyroid enlargement. Past history and system review were negative. The signs and symptoms were:

1. Beginning soreness and stiffness in the right side of the neck six weeks prior.
2. Beginning soreness, swelling of the left side of the neck with slight discomfort referred to the left ear, 4 weeks prior. Concurrently she felt very lethargic and suffered a chilly sensation. Examination by her physician disclosed an enlarged thyroid and temperature of 99.6. Four days of aureomycin and a total of 7 days bed rest failed to improve her condition.
3. At no time did she suffer sweating or excessive nervousness. An 8 pound weight loss was suffered.
4. w/d, w/n, Thyroid diffusely enlarged bilateral and movable. The left lobe being tender; there was no bruit. Lung and heart findings negative except for tachycardia, 100. BP: 138/80, R:20, Temp: 98.6. Liver and spleen palpable at costal margins but non-tender.
5. She was operated the second hospital day.

I summarize the above as a continuing pathological process involving an apparently previous normal thyroid. There seems to be a

striking lack of constitutional symptoms.

Laboratory:

Urine: s/g 1.026, one plus albumin, 12 wbc per high power field.

Blood: hb 13.4 gm, wbc 8,800, neutro 72%, lymphs 23%, monos 5%, sedimentation time 47 mm/hr.

BMR: plus 8.

Radio-Active Iodine Uptake: 0% in 48 hours

PBI: 10.6 microgm/100 cc. serum.

Kramer and Huldriek, Northwest Medicine, April, 1954, regards I(131) Uptake, states:

| % uptake in 24 hours Thyroid Activity | |
|---------------------------------------|----------------|
| 0-10 | Hypo-function |
| 10-40 | Normal (70%) |
| 40-55 | Equivocal |
| Above 55 | Hyper function |

Duffy, Army Medical Journal, 1954, compared I Uptake and PBI

50 Euthyroids I 97% 5-45% conc.

50 Euthyroids PBI 100% 3-5.8.

25 Hyperthyroids

I uptake 94% 50-85% conc.

PBI 100% 8-16 gamma

Duffy pointed out the diagnostic accuracy for hyperfunction and the parallelism of those two agents. He quoted Kyle regards BMR: "A poor adjunct to clinical judgment but one which is affected by many factors other than thyroid hormone."

Utilizing these criteria above, I exclude hyperfunction or hyperthyroidism as we understand the clinical entities. This because the BMR is essentially normal, the I uptake is subnormal and the PBI, though elevated modestly, is at variance with the other tests.

We next consider acute and subacute thyroiditis:

I exclude acute, suppurative thyroiditis because, I believe, the benign clinical course is not consistent with such a diagnosis. Statistically, this disease entity formerly occurred more often, but, since the advent of wide range chemotherapeutic agents is relatively rare.

We next consider the acute, non-suppurative thyroiditis. This entity is both more common than the suppurative and is seen quite frequently in spite of wide range chemotherapeutic agents. I exclude the acute, fulminating type with it's fever, pain and tenderness in the neck, and systemic symptoms as inconsistent with the clinical data. The acute, non-fulminating type with its slight fever, mild pain and tenderness

and insignificant symptoms must be considered. As a final diagnosis, I exclude it because of the lapsed period of time, 6 weeks, when clinically many acute cases run a self-limiting course of 5-15 days.

As I stated earlier, I consider this patient's condition as a continuing pathologic process. So, the term, subacute, simply covers the lapsed period of time. As everybody on home management seems to receive some chemotherapeutic agent, I do not know how to evaluate the initial prescribing of Aureomycin. Did the patient have evidence of an acute URI? Certainly the onset of a considerable percentage of non-suppurative thyroiditis seem to follow respiratory infections. The specific etiology usually remains obscure.

Subacute Thyroiditis:

I feel this diagnosis should be strongly considered. The clinical course is consistent i.e. a woman, probably post-menopausal, with a normal temperature following a low-grade febrile reaction, complaining of fatigue and moderate weight loss. The diffusely, bilaterally enlarged tender gland which is movable is almost characteristic. The left ear pain could be explained by the large, tense gland without definite nerve involvement as seen in carcinoma. Several sources consulted, state that a high percentage of thyroid enlargements, including the diffuse, begin in the right lobe, later involving the left lobe. I could find no explanation of this sequence. The modest tachycardia would suggest mild hyperthyroidism or conceivably reflex nerve irritation. Jackson, Am. J. Surgery, Dec., 1954, states "the sedimentation rate is greatly increased and may be up to 120 mm/hr." I hope he is right as our patient's reported rate of 47 mm/hr disturbed me. The blood findings are consistent with the diagnosis. The urinalysis, I believe, has no bearing. The palpable spleen is reported but no enlargement of the liver. Jackson reports the radio-active iodine uptake is low (5% compared with a normal 30-50). He failed to mention PBI. How they were able to do a 48 hour radio-active iodine uptake and operative on the second hospital day, I am not sure. Again, why they used 48 hours instead of the 24 hours which is usually reported, or the 5 hour gradient used by others is unclear, unless this case was reported when the procedure was new.

Something should be said regards Ligneous

Thyroiditis (Riedel's Syndrome). This actively fibrosing, chronic, non-specific inflammatory process is still said by some to arise *de novo*, but others consider it a stage in chronic non-specific thyroiditis. I reject it as a final diagnosis because of the lapsed time interval and because as a clinical entity, it seems to be *passé*.

Struma Lymphomatosis (Hashimoto's Disease) would fill many of the criteria of the protocol. I reject it as a final diagnosis for the same reasons I have rejected Riedel's Syndrome. McGavrick and others believe it should be considered as a variant of chronically progressing thyroiditis.

In the absence of reported blood serology, chronic diffuse inflammation due to acquired syphilis must be considered. This condition would fulfill several of the criteria in this protocol. I reject it on the assumption that the Committee wouldn't throw me a curve. I must suspect secondary tuberculosis with caseation necrosis and abscess formation both because the case is from Massachusetts General and the Committee may be testing me. It would fulfill several of the criteria in the protocol but it would seem most unusual with the negative past history.

Malignancies:

McGavrick states: "The most malignant of the thyroid carcinomas, the spindle cell and giant cell varieties, have failed to take up any of the radio-active iodine delivered to them. This is especially true in those adenomas or adenoma-carcinomas showing Hurthy-cell change." Both the small, round cell and giant cell carcinoma may spread rapidly and diffusely and early may be relatively asymptomatic, fulfilling many of the criteria in this protocol.

I believe the patient received the benefit of early surgery as the best means of establishing a definite diagnosis, and to exclude carcinoma.

FINAL CLINICAL IMPRESSIONS:

1. Subacute, non-suppurative, non-specific thyroiditis.

2. Carcinoma of the thyroid, diffuse, round or giant cell.

DIFFERENTIAL DIAGNOSIS

DR. WILLIAM C. QUINBY, JR.: It appears to me that anyone reading this protocol cannot fail to be impressed with the inflammatory nature of the disease affecting this patient. Also, it is obvious that this disease did not run an acute suppurative course nor a very prolonged

and chronic one. Therefore, the presumptive diagnosis of a subacute, nonsuppurative, inflammatory disease affecting the thyroid gland is tenable on clinical ground alone. The findings of the clinical laboratory and the special tests of thyroid activity serve to exclude many of the commoner forms of goiter and to cast doubt upon most forms of cancer of the thyroid gland. At the same time they support the impression gained from the history, clinical course and clinical findings to such a degree that the entire protocol becomes a so-called classic picture. I must review this for a moment.

The patient was a woman fifty-eight years of age. Most patients exhibiting thyroiditis are women, and most are between thirty-five and sixty years of age. One slight imperfection is that no known systemic or upper respiratory illness existed before she noted soreness and stiffness of the neck. Some such illness often antedates the onset of thyroiditis, so that a virus or bacterium has been favored as the initial cause for the disease. Her physician may have been thinking along the same lines, for when faced with low-grade fever, chilliness, lethargy and an enlarged and tender thyroid gland, he gave the patient aureomycin. His impression must not be taken lightly, for he saw her at a time when her illness apparently was more acute, and his treatment indicates that he thought she had thyroiditis.

When referred to this hospital she complained of pain in the neck. She gave no history or evidence on physical examination that would indicate thyrotoxicosis or myxedema. I have no evidence that a goiter existed before this illness. She showed a fast pulse and a high sedimentation rate and a high normal white-cell count, none of which are diagnostic of any specific thyroid disease but all of which customarily occur in subacute thyroiditis. The protocol does not mention vocal-cord paralysis, difficulty with respiration, inability to extend the neck without pain, presence or absence of lymph node enlargement in the vicinity or any distinguishing consistency of the thyroid gland. I cannot count on this absent information, but when it is coupled with the duration and course of the disease, I am justified in excluding acute inflammation or abscess and probably in excluding the chronic forms of thyroiditis called Riedel's and Hashimoto's struma. Rapidly spreading cancer of the small, round-cell type

cannot be excluded, but other forms probably can since this was a diffuse disease. A hemorrhage or degeneration of some pre-existing diffuse nodular disease of the gland also seems unlikely.

I am interested in the symptoms of discomfort about the left ear, mentioned toward the beginning. This is frequently cited in the literature about the acute or subacute forms of thyroid inflammation. I have tried to find an explanation for it since I do not remember this symptom in postoperative patients or in those who had extensive cancer. If the symptom applies to the external ear, it can easily travel along the sensory pathways of the second and third cervical nerves, which give rise to the greater auricular nerve as well as to the cervical branches supplying the skin of the neck anteriorly. This is a reasonable explanation, since pain in the occipital region or down the arm posteriorly also occurs in thyroid inflammation and could follow a similar reflex path. Pain referred to the eustachian orifice or inner parts of the ear is harder to explain, but might originate in the superior laryngeal nerve and travel with the vagus. However it may be, the symptom operates here to support the impression of thyroiditis.

Turning to the tests for thyroid activity, I find a dramatically low uptake of radioactive iodine. This practically excludes the existence of any functioning thyroid tissue. If functioning tissue did remain, it must have been saturated with iodine before the test, and hence incapable of assimilating any more. There is no evidence that this occurred. Even extensive involvement with cancer does not usually eliminate iodine uptake to this degree, whereas patients with lymphadenoid (Hashimoto's) struma show an average of 20 per cent uptake. The evidence against pre-existing colloid cysts or adenomas is similarly supported by this finding. True myxedema is also unlikely in the presence of a protein-bound iodine level of 10 microgm. per 100 cc., which is definitely an elevated value. Again, this is not likely in cancer but is characteristic of thyroiditis, in which it is thought that the inflammation may rapidly displace thyroid hormone (or the form of it that is measured as protein-bound iodine) from the gland. One school believes that the subacute form of thyroiditis (pseudotuberculous, granulomatous, giant-cell, DeQuervain's) may repre-

sent an inflammatory reaction to the colloid formed by the gland itself — as though the colloid suddenly becomes venomous and destroys secreting cells, the debris being cleaned by giant cells and other phagocytes.

Characteristically, the end-organ effect of thyroid hormone, the basal metabolism, was normal in this patient. This does not help me in diagnosis. I can only say that until thyroiditis has completely destroyed all thyroid tissue, myxedema is not encountered, and in this case the six-week interval was not long enough for the basal metabolic rate to tell us anything. For the same reason it does not help to exclude cancer.

There is some disagreement in the literature about the eventual course of subacute thyroiditis. Crile believes that it subsides, leaving slight residual disorders of function. Others say that it may progress to tracheal compression and a picture that is easily confused with Riedel's ligneous thyroiditis. Riedel's struma, in turn, may represent a degenerating nodule, as evidenced by its unilateral nature and the presence of adenomatous tissue in the center of the dense scarring. The entire nature of thyroiditis is confusing and still in the stage of clinical and microscopical description.

In summary, the age and sex of the patient, the relatively short but progressive nature of the disease, the pain in the ear, the initial low-grade fever, the chilliness, lethargy and slight weight loss, the fast pulse, the elevated sedimentation rate, the migratory nature of symptoms from right to left thyroid lobes, the diffuse enlargement with tenderness over the left lobe, the absence of tracheal fixation and the absent radioactive iodine and normal basal metabolic rate, form a characteristic picture.

One may ask, Why operate if this disease is so characteristic and may subside without serious sequela? I believe that in spite of all the clinical and statistical logic that we can muster, this woman had to have an exploratory operation to make the diagnosis certain and to meet and treat cancer if the reasoning was found to be false.

DR. WINGFIELD S. MORGAN: Dr. Quinby has analyzed this case very well; however, the operation was not exploratory in the sense in which we usually use the term. Dr. Hamlin, would you care to comment about the operation?

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DR. EDWARD HAMLIN, JR.: The operation was a needle biopsy of the left lobe of the thyroid gland with a little novocain infiltration. A Vim-Silverman needle was introduced into the substance of the thyroid tissue and a small core removed. This procedure was a little more uncomfortable than it usually is, because of the tenderness of the thyroid gland.

DR. EARLE M. CHAPMAN: We agree entirely with Dr. Quinby's interpretation. I think the swinging temperature to 101 and 102 F. together with the local signs, convinced her physician in Maine, who was not familiar with this pattern of thyroiditis, that bacterial infection was present.

CLINICAL DIAGNOSIS

Subacute thyroiditis.

DR. WILLIAM C. QUINBY, JR.'S DIAGNOSIS

Subacute thyroiditis.

ANATOMICAL DIAGNOSIS

Subacute thyroiditis, giant-cell type.

PATHOLOGICAL DISCUSSION

Dr. Morgan: The specimen we received in the laboratory was a thin cylinder of tissue measuring about 2.0 cm. long and 0.2 cm. in diameter. Microscopically, this showed a characteristic picture of subacute or giant-cell thyroiditis. There was extensive fibrosis, loss of acinar parenchyma and a diffuse, moderate infiltration by polymorphonuclear neutrophils, lymphocytes and eosinophils. Focal abscesses were present in places. In addition, there were granulomatous lesions composed of epithelioid cells and multinucleated giant cells surrounding masses of colloid. The thyroid acini that persisted had low epithelium and contained small amounts of colloid and occasionally cellular debris.

Many terms, such as subacute, giant-cell, pseudotuberculous and granulomatous thyroiditis, have been used to describe this condition. Its etiology is unknown, but the possibility of its being caused by a virus has been proposed by some writers although to my knowledge there have been no reports of its occurring in epidemic form. Crile believes that it is to be

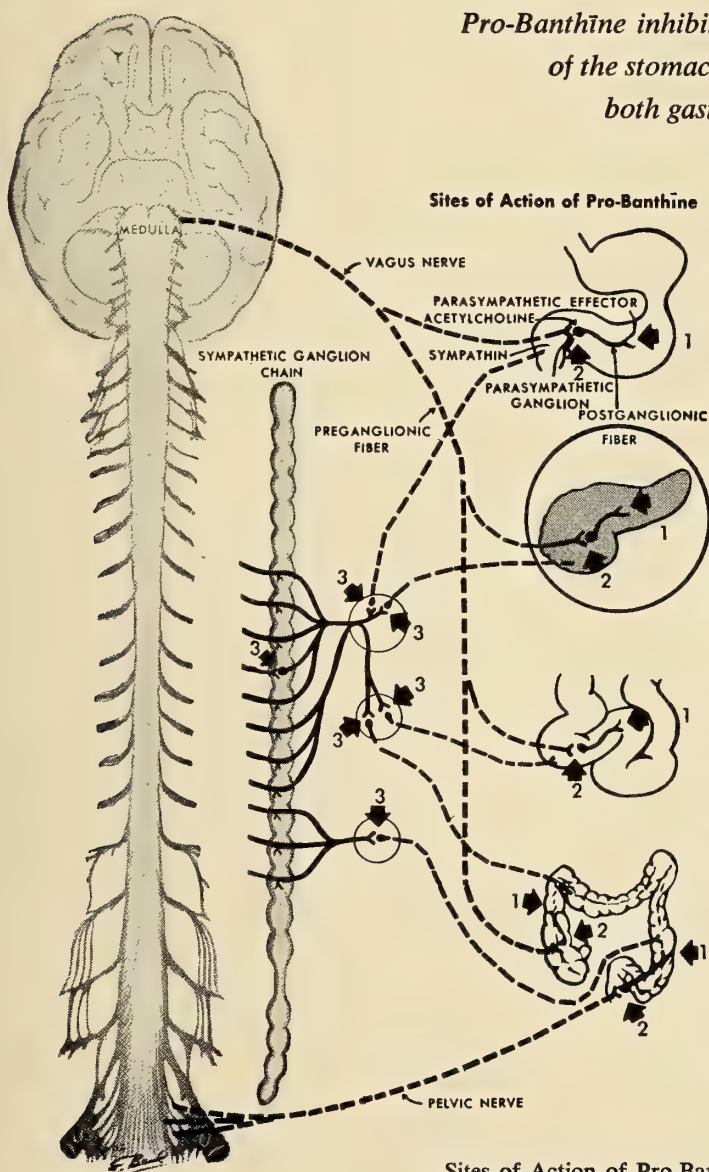
differentiated from Riedel's struma by the fact that in subacute thyroiditis the inflammation or scarring is limited to the thyroid gland whereas in Riedel's struma there is extension to surrounding structures. It seems to me that these are rather meager grounds on which to attempt to distinguish two pathologic processes. I have been unable to find a good clinical and pathological study of a significant number of cases describing histologic features by which these two conditions might be distinguished. Since in many cases of subacute thyroiditis the inflammation and fibrosis are severe and the local signs, such as tenderness and radiation of pain to the ear, are often prominent, the last strongly suggesting that there is extra-thyroid extension of the inflammation, I wonder if the element of degree of inflammation does not play a deciding role in determining which cases are to end up as "healed subacute thyroiditis" and which as "Riedel's struma." This is a confusing subject, to which the final answer does not appear to have been given. In a recently published study by Lindsay and his co-workers in which 354 cases of chronic thyroiditis were reviewed, 23 cases were classified as subacute or giant-cell thyroiditis. The photomicrographs demonstrated the same lesion found in the case presented today. Yet 13 of 19 cases were described as being extensively adherent to the trachea or adjacent muscles, and with but 2 exceptions these glands were described as firm, hard or even of the consistence of wood or stone. These, of course, are the classic descriptions of Riedel's struma.

Dr. Chapman: It has been stated that many of these patients go into myxedema after the disease subsides spontaneously or after the dramatic improvement that is seen after external radiation therapy. The patient under discussion experienced prompt relief from x-ray treatment, and the fever ceased the day after the first x-ray dose. This reaction to x-rays is a mysterious affair. Six weeks after therapy she had regained weight and felt well again. The thyroid gland was just palpable, and although there were no signs of myxedema the uptake of radioactive iodine was only 5 per cent in forty-eight hours and the protein-bound iodine was 0.4 microgm. per 100 cc.

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1. Jones, C. A.: Arch. Int. Med. 96:332 (Sept.) 1955.
2. Zollinger, R. M.: Postgrad. Med. 15: 323 (April) 1954.
3. Woodward, E. R.: M. Clin. North America 38:115 (Jan.) 1954.
4. Schwartz, I. R., and Hinton, J. W.: Personal communication, February, 1955.

Sites of Action of Pro-Banthine. The principal site of action of Pro-Banthine is on the parasympathetic system where it exerts a dual action while exerting a single and lesser action on the sympathetic system: (1) parasympathetic effector; (2) parasympathetic ganglion; (3) sympathetic ganglion (see arrows).

SEARLE

THE *President's* PAGE

Once again, the doctor is the target of biased iconoclasts, who would diminish the public's respect for the profession.

In an article in the *Woman's Home Companion* of July, 1956, two "researchers" Sidney Shalett and J. Robert Moskin have come forth with an alleged report on research conducted with the assistance of the Crowell-Collier regional offices. The article is entitled, "Why You Can't Afford to Be Sick," and it portrays the doctor as an avaricious butcher who bungles into malpractice suits.

In the early part of the article, the authors conceded that the doctor is a skilled healer, — "plus a bit of priest, friend and father." Also, that "Medicine, from a standpoint of technical proficiency, is in a golden era." Then they say that we refuse or fail to recognize the public's economic problems, in the blindness of our self-interest.

They also say that "the doctor has slipped from his pedestal." No, Mister Shalett and Mister Moskin, — the doctor isn't slipping — he is being rudely shoved off his pedestal by "researchers" who prefer to present to the reading public a slanted, biased report exposing the mis-deeds of a small minority of the medical profession. The writers recite cases of excessive charges, driving the patients' families into debt to pay for care in catastrophic or chronic illnesses. The impression is left with the reader that the doctor received ALL of the money. They fail to mention that the costs of hospitalization, nursing care, laboratory studies, drugs, etc., consumed the greatest part of each dollar spent for medical care, and the doctor's share was 27.8%, according to the latest available survey.

They also accuse us of opposing voluntary health insurance plans, charging additional fees above the Blue Shield payments, and of refusing to publish fee schedules. They "advise physicians to freely and openly admit their self-interest in practicing medicine." Other crimes to which we are expected to confess are overcharging, fee-splitting, ghost surgery, unjustified surgery, and refusal to testify against another doctor in malpractice actions. They claim that the public is defenseless against such abuses. These "thorough researchers" apparently never

heard of grievance or mediation committees, or probably forgot to mention to the readers that they exist, and that they are actively used instruments of the medical profession in the policing of its own ranks. As to unjustified surgery, — these "researchers" ought to sit in on some hospital staff meetings when the tissue committee reports are presented.

The AMA is pictured as a fat colossal trust, a "reactionary bureaucracy," a "medical octopus, controlled (mind you!) by county-level doctor-politicians whose views are not in tune with the progressing philosophy of a substantial number of American doctors." Sidney and J. Robert, can you get any lower than the county level, and still preserve democracy in the ranks of the AMA?

We are also accused of being against prepaid group plans, according to the "researchers," who failed to study the various states' laws regarding the corporate practice of medicine — purely because the writers' eyes are blinded by an outlook that can only permit the view of the socialistic exponents of state paternalism.

Other chapter headings accuse the "AMA of being against Truman and Ike," the AMA of contributing to the shortage of doctors (so that fewer of us can divide the loot), and they finally wind up the masterpiece of research by nobly proclaiming that "the people have a right." And there is more to come, because the publishers promise to further expose the evil and black heart of the medical profession in a second and final report in next month's *Companion*.

May I offer the "researchers" a bit of advice? Sidney and J. Robert, why don't you do your research where you claim the evils exist? — namely, in the office of the doctor? Go to the doctor's office, watch him work, listen to his discussions with the patient about his illness and the cost of his care. Also, go to the clinics, the hospitals, the staff meetings, and the medical society meetings, and see if we spend all, or any, of our time plotting against the people. You are even welcome to accompany us on those house calls that you claim that we refuse to accept.

A. I. Podolsky, M.D. Pres., Ariz. Med. Ass'n.

Editorial

ARIZONA MEDICINE

Journal of

ARIZONA MEDICAL ASSOCIATION, INC.

VOL. 13 AUGUST, 1956 NO. 8

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The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
5. Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.
6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.
7. Exclusive Publication—Articles are accepted for publication on condition that they are contributed solely to this Journal. Ordinarily contributors will be notified within 60 days if a manuscript is accepted for publication. Every effort will be made to return unused manuscripts.
8. Illustrations — Ordinarily publication of 2 or 3 illustrations accompanying an article will be paid for by Arizona Medicine. Any number beyond this will have to be paid for by the author.
9. Reprints — Reprints must be paid for by the author at established standard rates.

The Editor is always ready, willing, and happy to help in any way possible.

EDITORIAL

IN THE recent issue of MEDICAL ECONOMICS the opinion is expressed by Representative Walter Judd, M.D. (Republican-Minnesota) that doctors are too myopic in their civic interests. It is a complaint that can hardly be refuted. To be a good practitioner of medicine is fine but this hardly excuses or permits qualification as a poor citizen. More of us must and should take an active role in the civic functions as members of the Chamber of Com-

merce, the development of the educational institutions, etc., etc. Then possibly the doctor can be qualified to state that he should not be singled out for hospital assessments but should be treated as any citizen of the community.

Congressmen Urges Physicians
To Widen Their Civic Interests

Oradell, N. J. — American doctors should take a more active role in politics, says Rep. Walter Judd (R., Minn.), himself a physician. Many physicians work such long hours and pay such close attention to their patients, he says, that they sometimes fail "to take the longer view. . . . They won't get into politics; they won't discuss issues with their patients; they won't even bother to vote; they just go ahead and work. They're good in their profession. But what makes them good specialists sometimes makes them poor citizens."

The Congressman's opinions of his former colleagues appear in the June issue of MEDICAL ECONOMICS. He finds evidence for his views in the small amount of mail he receives from physicians on nonmedical issues.

"Doctors seem to concentrate on their own interests more than most groups," he comments. "I don't say this critically; it occurs as a result of their specialization. But we get less mail from doctors on general issues — international policies, farm policies, education, etc. — than from practically any other group in our population."

As further proof of physicians' occasional "narrowness," Dr. Judd cites the fact that they "pretty largely have the same point of view. They have lived together through medical school, in the medical society, and in the hospital staff rooms. They have a cup of coffee while they're in the OB room waiting for a baby. They're very much confined to their own group. They talk things over and little by little they come to think alike."

The antidote for such conformism? The doctor "ought to be more like the barber and talk to his own patients," the Congressman tells MEDICAL ECONOMICS readers. "The barber talks to you about everything. But the doctor only talks about your gall bladder or your toenail."

TOPICS OF *Current Medical* INTEREST

RX., DX., AND DRS.

By Guillermo Osler, M.D.

WAIT until you see the **newest medical magazine!** It is supposed to hit the stands about the end of this year — and 'hit the stands' is the proper term, since it is a commercial proposition called 'M.D.', and is made up like TIME and NEWS-WEEK. . . . It looks like an exciting proposition, and we will report on the June trial copy when it arrives this week.

Here comes that parade, passing us by again. Sometimes it is the trained chemicals; sometimes the new terminology with gold-painted wheels; now and then it is a specialty act. . . . This time we are left standing there by the band playing a strange tune, — "Piromen for Axillary Hidradenitis." It should be used **INTRAVENOUSLY, BEFORE** suppuration develops, and the dose is **6 GAMMA**. . . . Maybe the subscribers (**POST-GRADUATE MED.**) are ready for it, but not us **POST-post-grads**. . . . It turns out to be a simple thing after all, since 'Piromen' is for stress therapy, just a *Pseudomonas polysaccharide* which activates the pituitary-adrenal mechanism, and maybe all you people are using it. But remember, it is more effective if radiation and antibiotics are not used, or if you let an axillary specialist use it.

Sometimes a combination of specialists, in different fields, is required for an unusual or dramatic result. North Carolina produced such a conjugation recently. . . . Drs. Paul Sanger and F. H. Taylor are heart specialists in Charlotte. They wanted an **artery substitute** which could be used in place of the human aorta. . . . An orlon tubing was developed which resembled "a tiny knitted necktie." It came from the School of Textiles at North Carolina State College. . . . The specialist who produced it was Prof. W. E. Shinn, head of the school's department of **knitting technology**.

Another plastic surgical aid is the new **NYLON TRACHEAL TUBE** described by Broyles of Johns Hopkins. . . . It is lighter, cleans easier, wears out sooner but costs less, results in less tracheal irritation, it does not collect much mucus, does not obstruct radiation or give off secondary emanations, it will not dent, discolor, or (for people in barbaric climates) **FROST**. . . . The Surgical Development Co., Inc., is the manufacturer.

Just as dripping water wears away a stone, so has the advertising of 'MODERN MEDICINE' worn down our resistance to subscribing to 'GERIATRICS' magazine. . . . The passing of time

has helped. The fact that Dr. Walter Alvarez is an editor was an influence. . . . The chief reason for checking and sending in that little postcard was the overwhelming certainty that care of the elderly is here to stay. Everyone except those whose interest is limited to obstetrics and pediatrics had better brush up on the newest information. . . . That includes internists, and Willie (Nilly) Osler.

Speaking of Alvarez, as we often do, we find him in two newspaper situations which can be described in horsey terms, — he is in the "vanguard" of those who would consider the use of tranquilizers, and he has been riding his 'hobby' on other topics. . . . He reports that the trial use of vaccines against virus respiratory infections has been very successful. Formalin — killed 'cold' viruses have reduced the incidence of bad 'colds,' influenzas, and virus pneumonias by 80%. The work was done at Ft. Dix, N. J.; the series is small; there is no vaccine on the market.

The outstanding opinions about leukemia, as reported by Ciba's 'Medical News' from the Henry Ford Hospital International Symposium, include the following, — Metabolism of the leukemic cell is becoming partly understood. . . . A new derivative of colchicine (demecolcine, reported from Switzerland) is anti-mitotic and better tolerated and effective in chronic myeloid leukemia. . . . A radiomimetic compound, synthesized in London (CB 1348) has shown promising results in Hodgkin's disease at Ohio State, says Dr. Doan. It is like TEM and TEPA. . . . Anti-metabolites work better for acute leukemia in combination (6-mercaptopurine and azaserine) than one alone they say at Sloan-Kettering Inst. . . . Sometimes massive doses of corticosteroids are needed to get an acute case 'around the bend' to a remission, they find in Dallas, followed by the anti-folates or the anti-metabolites. . . . All of the agents work by changing the metabolism, rather than by anti-sepsis, it is noted. The question of antibodies is not solved.

Sir Heneage Ogilvie urges that surgeons cultivate 'gentle hands' in their operations (**SURGERY**, Feb. 1956). . . . They are all golfers as well as surgeons, so they know what 'BOGEY' means. A bogey which they once eliminated was super-speed operations. . . . A bogey which still remains is ending the operation with a living patient but with tissue trauma. It can be cut down. Actually

DOCTOR

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it may be better to keep an eye on the lapse of time which may in itself be traumatic.

We all look for friends in the interviews we see on TV, or in newspapers, and now in the columns of the news weeklies put out by drug houses. . . . Upjohn's 'Scope' has a section called "Questions for Doctors — and Answers." Here comes the smiling face of **Dr. Angus J. DePinto**, obstetrician and gynecologist of Phoenix, the first Arizonan we have seen. . . . The question, — "Do you think doctors generally take good enough care of their own health?" His answer, — an emphatic 'no,' plus a description of his belief.

Lewis Carroll told stories of a girl named Alice who ventured into a strange world where she saw things quite contrary to the way other people ever did. . . . Eleanor Alexander-Jackson, Ph.D., works in a cancer research lab. in New Jersey, and does research from which she can claim "A specific type of microorganism has been observed, isolated, and cultivated consistently from **EVERY ONE** of hundreds of specimens obtained from both animal and human **CANCER** of various types over a **FIVE YEAR PERIOD.**" (The bacterium is called 'Mycobacterius tumefaciens,' and has a life cycle). . . . She has worked with a group of other researchers, mostly women, using her own triple-stain, and their own media modifications. . . . Virginia Wuerthele-Caspe, M.D. was one of the group, but now lives in San Diego. She has discovered a germ in sclerodema, now named after her, and finds that they are recoverable in other collagen lesions. She also obtains the pleomorphic bacteria from 'cancerous blood.' . . . They quote other people who have found confirmation of parts of their work. . . . The findings may stand up, and be great pioneer discoveries, but it is even more strange than the 'animalcules' they see why the great research groups are so slow to confirm. . . . It reminds one of the people during the past fifty years who made such discoveries, — Bunting and Yates (in Hodgkin's), Leowenstein (TB), L'Esperance (Hodgkin's), et al.

You may logically give vitamin B-12 for deficiency, by hypy or otherwise, only in **pernicious anemia** and **cirrhosis of the liver**. There is a depletion in that latter condition, but not in cancer or old age or any other known condition. . . . The liver stores enough B-12, even when absorption has been impaired, so that it need not be replaced for **3 years**. . . . The use of B-12 must therefore be based on lack of such knowledge, revenue production, satisfaction of the patient, or for some of the several diseases for which it has been gingerly recommended (but which still need proof). . . . As Mowgli said "Look well, oh wolves!" . . . We could say the same for most usage of parenteral iron therapy.

Two 'strong stands' have been made, by big

name medical officials, in regard to tuberculosis. High time, and very well done. . . . Dr. Williams Middleton was known as 'Bill' to many Arizonans while he was fiercely and congenially riding herd on his students at Wisconsin, and when he spoke at Arizona meetings. He is now Chief Medical Director of the V.A. Says he, concerning TB, — "We must combat over-optimism on every hand, not only among lay, but also among professional people, because we are confronted with a situation in which **COMPLACENCY HAS REPLACED FEAR.**" He quotes Dubos, who wondered in 1954 whether the American people were willing to "pay off" for 20,000 deaths a year from TB. . . . The second quote answers the question as to whether children who have a newly positive tuberculin test but no signs of active disease should be given **CHEMOTHERAPY**. Dr. Robert Debre of Paris says, — "Why not? They have evidently been infected and may have 'subclinical TB'." . . . This confirms the less international opinions we have printed in this column in the past year. Also, it answers a problem we saw this week of a tuberculous family in which both parents have active TB. Both children have had positive tuberculosis. One child has abruptly developed a cavity. Who would hesitate to treat not only her, but also the sister? Not I.

An abstractor for the British 'Tuberculosis Index' is apparently allowed to comment on the article he abstracts. One of them did so very well in a recent issue, after reading a case-finding report by the American R. J. Anderson, who had pondered the 'value' of certain survey methods. . . . Says he, — "The cost of repeated surveys of a community should not be thought of as money spent to find a few cases of tuberculosis, but as the cost of a preventive or control measure designed to give **INSURANCE AGAINST** the re-accumulation of advanced cases difficult to treat, and unknown spreaders of infection, who if undiscovered could cause more cases."

No news column would be complete without current comments on the tranquilizers. There are 5 or 6 groups of them, with the meprobrates being most fashionable at present. They don't have the anti-nausea effect of chlorpromazine, nor the hypotensive effect of the Rauwolfia compounds, but they apparently don't have the toxicity either. . . . Ferguson of Detroit believes that tranquilizers should be used in balance with stimulants. He estimates, whether the dominant behavior is over or under-activity, then starts with the appropriate drug, then adds on the other type drug as the behavior pattern tends to resolve. If family doctors would use the drugs, commitments of mentally ill patients would be reduced 50%. When the program is used in an institution, especially among the elderly, about 50% could be sent home, if they had a place to go.



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RESOLUTIONS

Harold W. Kohl, M.D., Chairman,
Committee on American Medical Education
Foundation

Contribution To American Medical Education Foundation Through Dues Increase

WHEREAS, the primary responsibility for supporting Medical Education in order that it may remain free from the shackles of subsidies by the Federal Government; and

WHEREAS, the American Medical Education Foundation and the National Fund for Medical Education have dedicated themselves to this cause; and

WHEREAS, there is an operating deficit in all medical schools, whether private or tax supported, in the United States of \$8.00 per week per student, or a total of approximately \$11,000,000 per annum; and

WHEREAS, the average contribution of the American physician to medical education in 1955 was approximately \$4.00 each, although only about 20% of the American physicians contributed; and

WHEREAS, American industry is cognizant of the great problem and has contributed sums in excess of those of American medicine, and gauges its efforts by the answer to the question, "What are the doctors doing about it?" now, therefore, be it

RESOLVED, that the dues of the members of the Arizona Medical Association be increased by \$10.00 per annum, and that said increase in dues, amounting to less than 3 cents per day, be earmarked for Medical Education through American Medical Education Foundation; and be it further

RESOLVED that the date upon which the intent of this resolution becomes effective shall be January 1, 1957 and shall remain in continuing effect each year thereafter until rescinded by action of this House of Delegates; and be it further

RESOLVED, that should the American Medical Association, through its House of Delegates, at some future time determine to increase its annual dues or by assessment similarly provide for such support of American Medical Education, then the provisions of this resolution shall become ineffective.

* * *

Council (Treasurer)

Creation of the Arizona Medical Association

Benevolent And Loan Fund

WHEREAS, since 1950 it is no longer the policy of the Arizona Medical Association, through its Medical Defense Committee, to furnish legal aid to members of the Association involved in malpractice suits; and

WHEREAS, the funds accumulated as a Medical Defense Fund are no longer required because of this change of policy; and

WHEREAS, these funds were accumulated through the foresight of our pioneer members who saw the need for Association solidarity in matters of malpractice suits; and

WHEREAS, the monies thus accumulated should be kept in tact for some worthy purpose and not allowed to be dissipated piecemeal or for ordinary Association expenses; and

WHEREAS, there may be members of this Association who through disability may be in economic need; and

WHEREAS, there are worthy young citizens of Arizona who desire to enter the practice of Medicine but are prevented from doing so because of financial difficulties; and

WHEREAS, creation of the Arizona Medical Association Benevolent and Loan Fund would help to alleviate this condition for Arizona physicians and residents who are prospective medical students; and would be a perpetual and fitting tribute to our pioneer members who started and built up the Medical Defense Fund by their contributions over a long period of years; now therefore be it

RESOLVED by the House of Delegates of The Arizona Medical Association, Inc., assembled in annual meeting in Chandler, Arizona, April 28th, 1956, that the monies of the Medical Defense Fund be redesignated as "The Arizona Medical Association Benevolent and Loan Fund." Direct grants from this fund may be made directly to Association members in distress from the income of the fund and on a revolving basis to assist worthy young residents of Arizona who desire to secure a medical education. Said fund to be administered by a separate committee consisting of five members of the Association, three members to be appointed by the President, the Association Secretary, and the Association Treasurer. Details of operation of the Fund are to be worked out by the first Committee and approved by the Council of the Association before any loans or gifts are made; and be it further

RESOLVED that the Committee administering this fund may be authorized to accept contributions to the fund from Association members or from others in the form of cash gifts, bequests or legacies; and be it further

RESOLVED that this resolution is adopted in principle subject to the rewording as guided by our legal counsel and approved by Council of this Organization.

* * *

**Jesse D. Hamer, M.D., Chairman,
Insurance Investigating Committee
Proposed Fee Schedule For Private
Insurance Carriers**

WHEREAS, an Insurance Investigating Committee was appointed by the State Medical Council just prior to the Annual Meeting of this House of Delegates last year, at the request of the Officers of the Arizona Association of Health and Accident Underwriters; and

WHEREAS, in a meeting of your Committee with the Officers of this Group, it was learned that the members of the Underwriters Association was desirous of entering into negotiations with the Arizona Medical Association, for the purpose of a joint adoption of a "Fee Schedule" under which the insurance companies could operate, somewhat similar and somewhat on the same basis as the Blue Shield Schedule; and

WHEREAS, it was the expressed feeling of the members of the Insurance Investigating Committee that only this House of Delegates should decide this important matter; and

WHEREAS, this House of Delegates did adopt Resolution 12 at its meeting in 1955, which in substance did delegate the responsibility of conducting an investigation into the advisability of arranging a "Fee Schedule" with this Committee, so that a recommendation can be made to this House of Delegates at its meeting in 1956; and

WHEREAS, by the adoption of Resolution No. 12 last year, the House of Delegates did reserve unto itself the sole right to determine the attitude of the Arizona physicians toward this question; and

WHEREAS, by a polled vote of the membership of the Insurance Investigating Committee, in which a majority of the members did not favor further negotiations, and by action of your Council at its meeting April 25, 1956, properly moved and passed that your Committee do not recommend the adoption of a

"Fee Schedule" for the private insurance carriers; and

WHEREAS, action by the Corporate Body of Blue Shield at its meeting April 25, 1956 may culminate in changes not yet determined in the future operation of our own Blue Shield plan; now therefore be it

RESOLVED that this House of Delegates does not approve further negotiations with the Arizona Association of Health and Accident Underwriters which might lead to the adoption of a mutually acceptable "Fee Schedule" under which the private insurance carriers would operate in the payment of fees rendered by physicians in this state to policyholders who have purchased sick and accident policies from all commercial carriers; and be it further

RESOLVED that in the adoption of this resolution nothing shall be construed to prohibit any physician from voluntarily agreeing to accept payment of a fee comparable in amount now paid by the Blue Shield plan from any private insurance carrier, especially for services rendered to policyholders in the low income brackets.

* * *

**Darwin W. Neubauer, M.D.
State Medical Examiner**

WHEREAS, it is in the best interest of the people of the State of Arizona to have a medicolegal system whereby sudden and unexplained deaths may be properly investigated; and

WHEREAS, the ends of justice will be better served by increasing the efficiency of proof in so far as certain types of death are concerned; now therefore be it

RESOLVED that the Arizona Medical Association endorse the principal of a state-wide Medical Examiner's system.

* * *

**Frank W. Edel, M.D., President,
Maricopa County Medical Society
Premarital Serological Examinations
And Waiting Period**

WHEREAS, the value of premarital serological examinations has been established by legislation in a large number of states of the United States; and

WHEREAS, we as physicians should be more cognizant than the general public of the benefits of such legislation; and

WHEREAS, we as physicians in our experi-

ences in marriage counselling are also cognizant of the benefits of a three-day waiting period before marriage; and

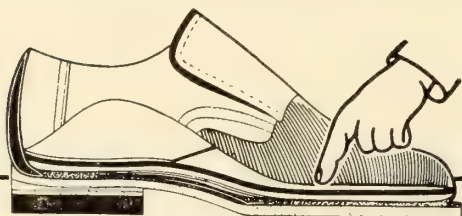
WHEREAS, previously proposed legislation so ably presented and supported by our Association through its legislative committee has repeatedly met with an adverse fate at the hands of previous legislatures; now therefore be it

RESOLVED that the Arizona Medical Association go on record as approving legislation requiring compulsory serological examination of all marriage candidates both resident and non-resident and a compulsory residency and three-day waiting period before all marriages; and be it further

RESOLVED that we commend and give our whole-hearted support to the Ministerial Group for their vigorous efforts in behalf of such legislation and their determination to bring this before the people by initiative at the next general election.

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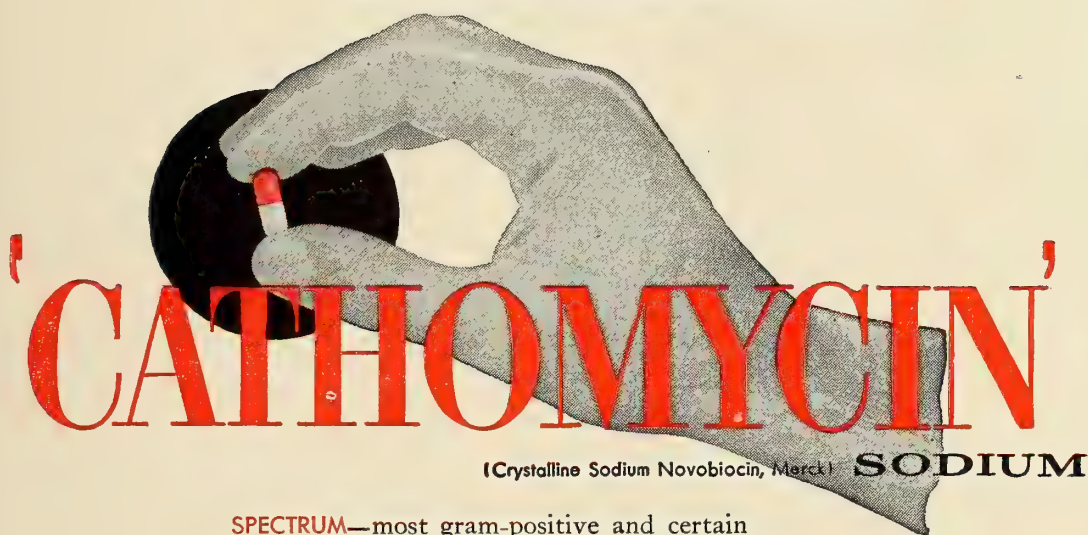
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SPECTRUM—most gram-positive and certain gram-negative pathogens.

ACTION—bactericidal in optimum concentration even to resistant strains.

TOXICITY—generally well tolerated. This is more fully discussed in the package insert.

ABSORPTION—oral administration produces high and easily-maintained blood levels.

INDICATIONS—cellulitis, pyogenic dermatoses, septicemia, bacteremia, pneumonia and enteritis due to *Staphylococcus* and infections involving certain strains of *Proteus vulgaris*; including strains resistant to all other antibiotics.

DOSAGE—four capsules (one gram) initially and then two capsules (500 mg.) twice daily.

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Organization PAGE

CIVICS — Norman Ross, M.D.

A COLLEGE OF NURSING FOR ARIZONA

“****the Board of Nurse Registration and Nursing Education has spearheaded efforts to bring about the establishment of a collegiate basic nursing program****.”

/s/ (Mrs.) Frieda B. Erhardt, R.N.

Executive Secretary

Of the 113,693 nursing positions now filled in the United States on the administrative, supervisory, and instructional levels in hospitals and schools of nursing, 23,521 or 26% are filled by nurses holding a Bachelor's and/or a Master's degree, and 90,172 or 74% are filled by nurses who hold no degree. The latter, or three-fourths of the nurses filling these positions do not have adequate educational preparation according to the standards set by the National League for Nursing. There are 87 basic degree programs in the United States offered by Departments or Colleges of Nursing within college or university settings. However, no such programs exist in Arizona. Since the recent establishment of the nursing education program within the University of New Mexico, Nevada and Arizona are the only states in the Western regional area without collegiate nursing programs.

Not only educational and clinical hospital facilities, but also the potential student enrollment in Arizona far exceed those of New Mexico. Reliable statistics show that more and more of the young women entering the nursing profession are enrolling in collegiate programs. Every year some eighty to 100 Arizona students enter schools of nursing outside of the state. This does not necessarily indicate that they all enroll in collegiate nursing programs. Many young women of this state who enroll in other vocations and professions within the college or university might enroll in nursing if a collegiate program were available in Arizona. Because we frequently have inquiries from prospective students and graduate nurses from other states, we have reason to believe that Arizona would draw recruits from other states if such a program in nursing were available. It is known that a collegiate program in nursing is needed in the state of Arizona, not only for

the basic student but also for the graduate nurse who desires to further her nursing education. This is evidenced by the fact that many nurses are enrolled in Arizona state colleges and universities; however, courses in their major area of nursing are not offered. Therefore, today students graduating from Arizona schools must and do so out of state to attend universities and colleges offering nursing programs. These collegiate nursing programs not only offer basic courses but also advanced courses in clinical specialties such as pediatrics, obstetrics, orthopedics, medicine, surgery, psychiatry, public health and mental health nursing. Some courses in public health nursing have been offered in Arizona by the University of Colorado through visiting professors.

Many surveys have been made to substantiate the need for collegiate nursing education. In 1950 Margaret Arnstein, Chief, Division of Nursing Resources of the Public Health Service, in the Federal Security Agency in Washington, D.C., made a “Survey of Nursing Needs, Resources and Supply in Arizona.” In 1953 Dr. Ernest Hollis of the United States Department of Education made a survey of educational programs. In March, 1954, Dr. Margaret Bridgman, Consultant, Department of Baccalaureate and Higher Degree Programs, National League for Nursing, made a consultation visit to Arizona. In 1955 Dr. Walter Brazie, made a report on the Sub-Committee on Higher Education of Arizona's White House Conference on Education. All agreed on the need for a collegiate nursing program in Arizona. It, therefore, does not appear that further surveys and studies are necessary. Resolutions have been adopted in support of a collegiate nursing program at the past annual conventions of the Arizona State Nurses Association, Arizona League for Nursing, and the Arizona State Nurses Association. It appears that the primary deterrent at this time to the beginning of the establishment of a collegiate program in nursing in Arizona is WHERE IT SHALL BE ESTABLISHED — in Tucson or in Tempe. This program may well be included in the curriculum of one or more

colleges or universities in this state. If the nursing profession in Arizona is to keep pace with the times in improving patient care and promoting nursing education, a collegiate program in nursing must be established.

****the nursing profession will continue to make every effort to improve patient care through the promotion of nursing education in the State of Arizona.****

/s/ E. Loretta Anderson, R.N.
Director of Nursing
Good Samaritan Hospital

* * *

Briefs:

The Joint Commission on Mental Illness announces a \$25,000 grant from Smith, Kline & French Foundation of Philadelphia. They hope to obtain two and a half million dollars from private foundations and industry to supplement government funds (three million over a three year period), Public Law No. 182.

* * *

FORD FOUNDATION ANNOUNCES MENTAL HEALTH GRANTS. The grants totalling \$6,826,850, will be used over a five year period. Twenty-one of the 231 applying projects were selected.

* * *

A.M.A. O.K.'S "SAFETY CHARTER FOR YOUTH." A National Safety Council Project in which "Safety experts point out that accidents wipe out more young lives each year than the next several leading causes of death combined. To reduce this terrible toll physicians must play an appropriate leadership role within their communities."

* * *

AMERICAN CANCER SOCIETY, INC.,

Arizona Division, 1429 North 1st Street,
Phoenix, Arizona.

CANCER RESEARCH:

Dr. Casimer T. Grabowski, a University of Pittsburgh scientist, demonstrates the presence of life's primary organizing center in chicken eggs. The Pittsburgh scientist transplanted this structure from one egg to another and produced embryonic Siamese twin chickens in the second egg.

Cancer cells grow wild as though uncontrolled by an organizer remaining immature but

dormant until some agent sets them off on a lethal spree.

Dr. Eldon J. Gardner, Professor of Zoology at the Utah State Agricultural College, experiments on heredity in its relation to cancer: The X chromosome appears to carry one of the two genes responsible for a large red tumor on the head of the fruit fly. This chromosome is contributed by the mother in parental endowment of male offspring. The research offers only indirect implication that some human cancer may be inherited.

* * *

Dr. B. L. Freedlander reports on an extensive seven-year "shot gun" search for compounds which would arrest the growth of human cancers.

Dr. Freedlander states no cancer cures have been found. Very few compounds have shown promise for slowing down of cancer's growth. Only three thousand of the million or more compounds available so far have been tested.

* * *

Dr. Henry P. Plenk of the University of Utah and St. Mark's Hospital, research as to the effect of x-ray against cancer:

Dr. Plank transplants cancer to the eyes of mice and with a variety of drugs attempts to augment or inhibit the effect of x-ray against these cancers.

* * *

HEALTH INFORMATION FOUNDATION,
420 Lexington Avenue, New York, N. Y.

"Evidence of the significant accomplishments of the Foundation is the exciting progress made in extending health insurance to more Americans." At the close of 1955, 105 million Americans were covered by hospital insurance, a 60 percent increase over the 66 million persons with similar protection in 1949. In the same period the number of surgical insurance holders increased from 41 million to 90 million.

Dr. Lowell T. Coggeshall of the U. S. Department of Health, Education and Welfare, defines the basic health insurance problem as that of providing "the maximum possible protection for the maximum number of people at the minimum cost."

****if health insurance is to remain voluntary****," he suggests five areas "which offer

opportunities for expanding and improving voluntary health insurance."

1. Coverage of major or "catastrophic" illness.
2. Development of comprehensive, one-package plans, including outpatient services.
3. Coverage of older persons.
4. A higher income ceiling in surgical plans.
5. Better coverage of persons who are not members of organized groups and those with low incomes.

EVALUATION OF THE FOREIGN MEDICAL SCHOOL GRADUATE

AT ITS recent meeting, the A.M.A. Board of Trustees approved the long-sought program for evaluating foreign medical school graduates and also the planning for the administration of a program as proposed by the Cooperating Committee on Graduates of Foreign Medical Schools.

The Committee is composed of representatives of the A.M.A. Council on Medical Education and Hospitals, the Federation of State Medical Boards of the U.S., the American Hospital Association and the Association of American Medical Colleges.

After almost two years of intensive study, the Committee has submitted its final report which has already received favorable action from all of the four parent organizations.

The proposed program is designed to clear up two important facts regarding each foreign medical graduate who wishes to come to the United States as an intern or resident or in any other position that involves medical care of the American public: 1. The medical credentials of a foreign-trained physician must clearly indicate that he was graduated from a bona-fide medical school, and 2. By examination, a foreign medical graduate must demonstrate that he has medical knowledge equivalent to that demanded of graduates of schools in the United States.

It is planned that this evaluation service will be established within an independent organization whose affairs will be directed by a Board of Trustees designated by all of the four organizations. The Committee hopes that this planning will be implemented shortly so that

the evaluation service can become an effective mechanism within the next year.

There has been a continuing influx of foreign-trained physicians to the U. S. for a long time. At present, there are more than 6,000 such physicians in this country on temporary visas serving as interns or residents. It is estimated that more than half of this group entered during the past year and the remainder represent those who have been here for more than a year. All foreign-trained physicians here on temporary visas are supposed to return to their native countries on completion of their internship or residency training.

In addition, there is another group of approximately 1,000 foreign-trained physicians who enter each year as immigrants or as American citizens returning after completing their education abroad.

Deceased M.D.'s quarters for rent, partially furnished, good location, plenty parking space, asking nothing for practice, reasonable rent, reasonable janitor service.

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The Hobby Horse Ranch School is a branch of Fairview School in Fishkill, New York which was established in 1936.

Directors: Blanche C. Lightowler, B.A.
Matthew W. Lightowler

P.O.B. 44, Cortaro, Ariz.

**NOTES FROM THE DESK OF THE
EXECUTIVE SECRETARY**
**Proposed New PRINCIPLES OF MEDICAL
ETHICS:**

The current Principles of Medical Ethics of the American Medical Association are contained in a voluminous forty-seven (47) sections of eight (8) chapters. Reproduced below is the proposed **NEW** Principles of Medical Ethics prepared by the AMA Council on Constitution and By-Laws with the cooperation and endorsement of the Judicial Council.

PREAMBLE

These principles are intended to serve physicians, individually or collectively, as a guide to ethical conduct. They are not laws; rather they are standards by which a physician may determine the propriety of his own conduct. They are intended to aid physicians, in their relationships with patients, with colleagues, with members of allied professions and with the public, to maintain under God, as they have through the ages, the highest standards.

Section 1. The prime objective of the medical profession is to render service to humanity with full respect for both the dignity of man and the rights of patients. Physicians must merit the confidence of those entrusted to their care, rendering to each a full measure of service and devotion.

Section 2. Physicians should strive to improve medical knowledge and skill, and should make available the benefits of their professional attainments.

Section 3. A physician should not base his practice on an exclusive dogma or a sectarian system, nor should he associate voluntarily with those who indulge in such practices.

Section 4. The medical profession must be safeguarded against members deficient in moral character and professional competence. Physicians should observe all laws, uphold the dignity and honor of the profession and accept its self-imposed disciplines. They should expose, without hesitation, illegal or unethical conduct of fellow members of the profession.

Section 5. Except in emergencies, a physician may choose whom he will serve. Having undertaken the care of a patient, the physician may not neglect him. Unless he has been discharged, he may discontinue his services only after having given adequate notice. He should not solicit patients.

Section 6. A physician should not dispose of his services under terms or conditions which will interfere with or impair the free and complete exercise of his independent medical judgment and skill or cause deterioration of the quality of medical care.

Section 7. In the practice of medicine a physician should limit the source of his professional income to medical services actually rendered by him to his patient.

Section 8. A physician should seek consultation in doubtful or difficult cases, upon request or when it appears that the quality of medical service may be enhanced thereby.

Section 9. Confidences entrusted to physicians or deficiencies observed in the disposition or character of patients, during the course of medical attendance, should not be revealed except as required by law or unless it becomes necessary in order to protect the health and welfare of the individual or the community.

Section 10. The responsibilities of the physician extend not only to the individual but also to society and demands his cooperation and participation in activities which have as their objective the improvement of the health and welfare of the individual and the community.

At the Annual Meeting of the House of Delegates of AMA held in Chicago, the reference committee approved the material recommending that action be taken at the next session.

Auxiliary Honors to Arizona

Honors for chalking up the largest number of subscription sales in the "Today's Health 1955-56 Woman's Auxiliary" contest went to the States of Arizona, Indiana, Kansas and New Mexico. Arizona's State Chairman was Mrs. James C. Soderstrom of Whipple. Each State Auxiliary received a check of forty⁰ dollars. County winner and chairman, second prize (twenty-five dollars), Yuma County, Mrs. William A. Phillips. Congratulations ladies. Another project well handled with gratifying results.

District Reporter

It was moved and passed on July 17th 1956 that the Yuma County Medical Society inform, Mr. Frank Bronski, President of Local Chapter of The Polio Foundation That —

The Society has gone on record as opposed to a Polio clinic free to all comers.

However, if a program is arranged for those who truly cannot pay, the society will cooperate fully.

P. J. Slosser, M.D.

NATIONAL DISEASE AND THERAPEUTIC INDEX ISSUES THREE-MONTH PROGRESS REPORT

More Than Twenty-Five Phoenix Area Doctors
Participating In Nationwide Study

THE NATIONAL Disease and Therapeutic Index, a medical statistical research program of exceptional value, has completed its first three months of operation with the promise of interesting and useful results. Designed to provide information for continuous study of the nature, scope and frequency of occurrence of non-fatal disease, injury, and other conditions as seen by the doctor in private practice in the United States, the program involves the compilation of statistical data showing why patients see doctors and what types of treatment they receive.

Nearly nine hundred doctors, located in twenty-seven statistically-selected, representative areas throughout the country, have agreed to participate in this important project which has aroused the professional interest of medical men, and particularly of medical educators and those involved in both basic and applied research.

At the present time, more than twenty-five doctors in Phoenix and vicinity are cooperating in the N.D.T.I. program, and enlistment of additional panel members is proceeding rapidly. A recent analysis showed the following representation by types of practice in this area: thirteen general practitioners, five internists, three surgeons, one otolaryngologist, one eye, ear, nose and throat specialist, one obstetrician-gynecologist and one dermatologist.

Established to meet the long-recognized need for statistics on morbidity as contrasted with those on mortality, the program was explored thoroughly with top-level members of the American Medical Association staff; representatives of many state, county and local medical societies; a number of medical educators; and others in the medical profession and allied fields before being put into operation. The non-existence of reliable data in this area of research, and the potential value of such data in general and specialized medical practice, research and education has been recognized consistently by those consulted.

To accomplish the objectives of the program, a panel of 864 randomly selected doctors is

being established, consisting of approximately thirty-two men in each statistically selected sample area. The design of the distribution provides for the inclusion of both urban and rural doctors, and proper proportional representation of general practice and the various specialties.

Each cooperating doctor will report four times per year, giving the age, sex, diagnosis or diagnoses, and therapeutics administered to or prescribed for each patient seen during the course of a forty-eight hour period once each quarter. In a pilot study conducted with fifty doctors in the Philadelphia area in September 1955, it was determined that the program was completely feasible, and that the required case record for each patient could be completed in less than one minute. Of particular importance to the members of the medical profession and the public is the fact that the names of patients are never involved and the names of reporting doctors are not identified with case records. The identities of doctors participating are never divulged by the N.D.T.I. in reports or other data submitted to the sponsoring organizations, the American Medical Association, or any other individual or organization.

To serve as liaison with the reporting doctors, and to supervise the operation of the program in each area, twenty-seven coordinators have been appointed. Their function is to assist in enlistment work and scheduling of reporting dates, and to do preliminary coding of diagnoses according to the **International Statistical Classification of Disease, Injuries and Causes of Death**.^{*} The coordinators are drawn from among trained medical personnel in each sample area.

The full research facilities of Taylor, Harkins and Lea, Inc., of Philadelphia, have been utilized in the organization, development and operation of the N.D.T.I., and the program has the support of leading ethical pharmaceutical houses. Continuous liaison has been established with the Bureau of Economic Research and the Journal of the American Medical Association to assure that that organization will be prepared to receive and utilize such data as may, after careful analysis and evaluation, be of general use. Other organized medical groups and the nation's medical schools eventually should benefit from such useful data as may be developed from time to time as a result of the program.

In summary, the data to be gathered by means of the National Disease and Therapeutic

Index should aid: medical educators in planning new and revising current curricula; medical investigators in determining the directions to be taken and the goals to be sought in research; practicing doctors particularly in efforts directed toward preventive medicine; health organizations in planning establishment and development of future programs and revision or possible abandonment of current ones; and pharmaceutical manufacturers in research and product development designed to meet current and future needs. Because of the vast scope of the program, it will be some time in 1957 before data can be processed and evaluated to determine what may be of benefit to various segments of the profession.

*Sixth revision of the international lists of diseases and causes of death, adopted 1948, published by the World Health Organization, Geneva, Switzerland, 1949.

AMERICAN COLLEGE OF CHEST PHYSICIANS

The 22nd Annual Meeting of the American College of Chest Physicians was held at the Hotel Sherman, Chicago, Illinois, June 6-10. Over 1,400 physicians and guests attended the meeting. Fellowship certificates were presented to 250 physicians at the Convocation held on Saturday, June 9.

Dr. Howell S. Randolph, Phoenix, was re-elected Governor of the College for Arizona.

Four Arizona Mayor-Pharmacists Receive National Recognition In Top Pharmacy Publication

A quartet of Arizona mayor-pharmacists — Hugh Laird of Tempe, George N. Goodman of Mesa; Charles K. Vickrey of Peoria and Jose S. Colunga of Nogales — are receiving national recognition currently in the nationally distributed magazine, MODERN PHARMACY, published by Parke, Davis & Co. of Detroit.

The article in the summer issue, written by Henry F. Unger, publicity supervisor for the Salt River Power District, demonstrates how this foursome of mayor-pharmacists combine their drugstore talents with the duties of running a town. Pictures also show the men at work in their stores. There are also exterior photos of the drugstores.

ALCOHOLISM

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LOCATION OPPORTUNITIES

Miami-Globe area — Globe — Pop. 6500 — Has county hospital of approximately 75 beds and of this, one-half are available for private patients. There are six doctors in this town. Miami (five miles from Globe) has an industrial hospital staffed by approximately seven doctors, who care for personnel and families of those who work for the three principal mining companies. Pop. 4300. At present time there is no full time active private practitioner of medicine in the town of Miami. This community is served by numerous small mining and ranching interests. Specific queries should be directed to the Gila County Medical Society, Box 68, Globe, Arizona.

Flagstaff — Pop. 7500 — Navajo Ordnance Depot is in the process of recruiting for a medical officer GS-12, \$7040 per annum. For further information write M. R. Bell, Personnel Officer, Navajo Ordnance Depot, Flagstaff, Arizona.

Gila Bend — Pop. 2500 — Good opportunity for general practitioner. Cattle, cotton, and general farming. Office and equipment available. \$150 monthly income from Board of Supervisors. Contact Mrs. J. F. Allison, Box 126, Gila Bend, Arizona.

Yarnell — Pop. 500 — Rapidly developing community. Contact Elsie Kolar, President, The Wranglerettes, Inc., Box 196, Yarnell Arizona.

Douglas — Pop. 10,000 — Opportunity for associate practice in OAIR. Contact James S. Walsh, M. D., 631 9th Street, Douglas, Arizona.

Ashfork — Pop. 700 — Railroad center — Contact Mr. J. J. Slamon, Justice of Peace, Ashfork, Arizona.

Bagdad — Pop. 2,000 — Industrial practice. Company has built new clinic and ten-bed hospital at which latter facility Ob and minor surgery can be conducted. New x-ray equipment ordered from Westinghouse. Attractive salary, furnished house, and oil and gasoline consumed provided. Approximately 75 miles from Prescott or Wickenburg. Contact Stanley W. Holton, M. D. or Mr. George Colville, Bagdad, Arizona.

Youngtown — Pop. 130 — Located 16 miles from Phoenix, 4 miles from Peoria, 1½ miles from El Mirage, 1 mile from Surprise, each a potential field of practice. It is within an agricultural area. Most residents are 60 years of age or older, and are in need of medical care. Currently provided at no rental is office space. A medical center facility is being planned. Interested medical doctors may contact Mr. Sid Lambert, Box 61, Marionette, Arizona.

Willcox — Pop. 900 — Doctor C. J. Bozzi, 124 West Maley Street, Willcox, Arizona, is interested in disposing of practice. He is expecting only reasonable payment for equipment. Records go with such sale.

Yuma — In need of a county physician. This is an ideal set-up for a retired or semi-retired doctor. The doctor could devote all his time to the job or have a private practice in addition. If interested, call Mr. Ray Odom collect at Sunset 3-7843 as soon as possible.

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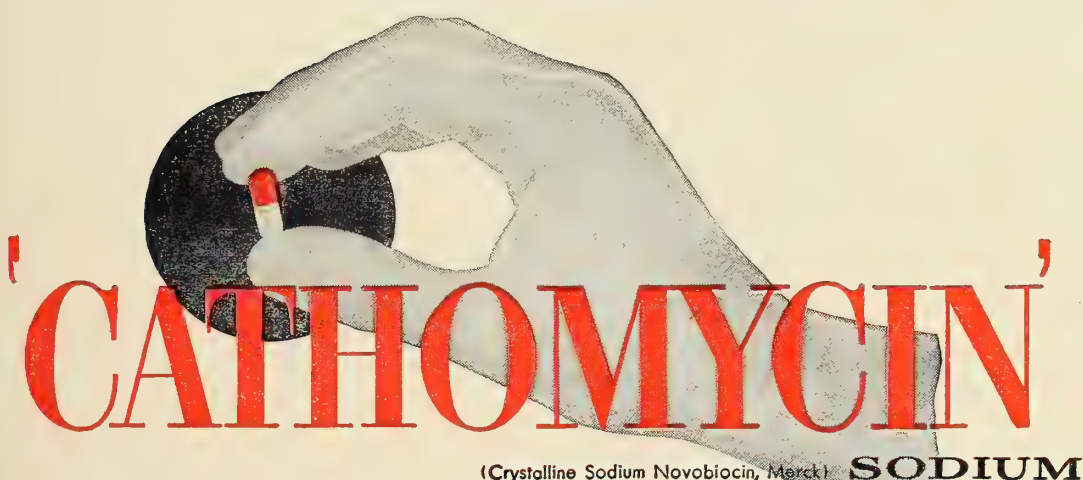
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MEETING NOTES

From August 19 to August 23 the IV. International Congress on Diseases of the Chest of the American College of Chest Physicians will be held in Cologne. The patronage over the Congress has been taken over by the Federal Chancellor Dr. Konrad Adenauer.

G. Domagk, President; H. W. Knipping, Vice-President; J. Jacobi, General Secretary; J. Hein, Chairman of the Executive-Committee; Executive-Committee: O. Buurman, L. Heilmeyer, R. Schoen, W. Unverricht, E. Wollheim, H. Wurm, R. Zenker, A. Banyai, M. Kornfeld.

August 20, 56:

Coronary Diseases of the Chest: J. Stamler, USA; W. Giese, Germany; N. Kimura, Japan; E. Gregg, USA; M. Holzmann, Switzerland; E. Wollheim, Germany; C. S. Beck, USA; H. E. Bolton, USA.

Industrial Diseases of the Chest: A. L. Banyai, USA; L. Dautrebande, Belgium; H. Valentin, Germany; Lopo de Carvalho, Portugal; E. W. Baader, Germany; T. Turiaf, France; G. S. Kilpatrick, England; R. H. Goetz, South Africa.

August 21, 56:

Virulence and Resistance under Chemotherapy of Pulmonary-Tuberculosis: J. Hirsch, Switzerland; G. Meissner, Germany; L. Heilmeyer, Germany; E. Bernard, France; G. Domagk, Germany; H. Rink, Germany; A. Omodei Zorini, Italy; J. A. Myers, USA; H. Wurm, Germany.

August 22, 56:

Pulmonary Function: S. Bjorkman, Sweden; W. G. Zijlstra, Holland; P. Sadoul, France; Ch. Fletcher, England; R. Vaccarezza, Argentina; W. Bolt, Germany; C. W. Hertz, Germany.

Cardiac Function: R. G. Kourilsky, France; A. de la Fuente Chaos, Spain; O. Garcia-Rosell, Peru; M. S. Mazel, USA; H. Reindell, Germany; B. L. Gordon, USA; J. Jacobi, Germany; H. W. Knipping, Germany; K. Wezler, Germany.

August 23, 56:

Tumors of the Mediastinum: A. Caralps, Spain; H. Krauss, Germany; E. Uehlinger, Switzerland; M. Loeweneck, Germany; M. J. Bariety, France; R. H. Overholt, USA; H. Venrath, Germany.

Panel Discussions: Names of the speakers in the definitive program.

Languages: English, French, Spanish, German. Simultaneous translation. **For information:** Sekretariat des IV. Internationalen Kongresses

"American College of Chest Physicians," Koln-Deutz, Messeplatz (Germany).

REVOLVING ASSISTANCE FUND

THE SEARS-ROEBUCK FOUNDATION

A year ago the Sears-Roebuck Foundation, in cooperation with the American Medical Association, made a grant of \$125,000 for the establishment of a Revolving Assistance Fund. The purpose of this fund was to make loans to physicians desiring to establish or improve medical facilities in areas where the medical care is inadequate. It is the intention of the Foundation to continue to make this grant to the Revolving Fund each year. Evaluation of all applications is done by a Medical Advisory Board composed of prominent and highly qualified physicians appointed by the Trustees of the American Medical Association.

In the short time the fund has been in existence, 22 loans have been made affecting 33 physicians from 13 states. Loans ranged from \$3,000 to \$25,000, and total loans amounted to \$179,500. Loans have gone to general practitioners, specialists, partnerships and medical groups. The sole criteria, besides medical proficiency, has been the need of the community for medical care. So the Revolving Fund may grow, all repayments, principal and interest, go into the fund for future loans. There is no charge to this fund for administration of the program. This is met by another Foundation grant.

In 1956 it was necessary to have two cut-off dates in processing applications — April 1st and October 1st. Applications received before April are decided upon before June 15th. Applications received before October 1st shall be acted upon by December 15th. The Foundation is now accepting applications for the last half of 1956.

These assistance funds are available to both graduating interns and established physicians, especially for those desiring to serve communities with inadequate medical coverage or medical facilities. It is a ten-year, non-secured loan ranging from zero to six per cent interest depending on the rapidity of repayment.

Possibly there are physicians in our state who are not aware of this opportunity to improve existing facilities or to establish themselves in private practice in rural or suburban areas. The

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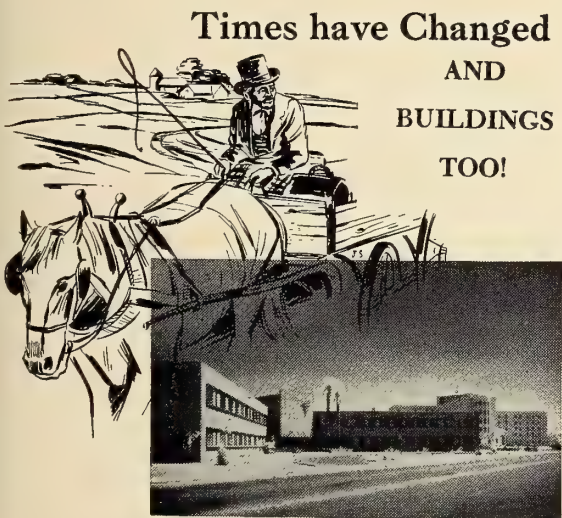
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San Diego, Calif.

April 1st cut-off date is ideal for graduating interns since loans are approved in June which is generally the time they graduate. The October cut-off date is ideal to aid those established physicians who have poor medical facilities and are now in a position to incur the responsibility of building or improving their medical units.

This Revolving Assistance Fund has great potential. It is growing now. The future of the fund, to be of service to the medical profession in the field of medical distribution, depends entirely on reaching and informing physicians of the existence of this fund. Write the Central Office of your Association for a more detailed pamphlet describing the plan and outlining procedure in applying for a loan, or, if you prefer, you may correspond with the Foundation direct, 3333 Arlington Street, Chicago, Illinois.

INTERNATIONAL CANCER CYTOLOGY CONGRESS

The first International Cancer Cytology Congress sponsored jointly by the International Union Against Cancer, The College of American Pathologists, The American Society of Clinical Pathologists and the Inter-Society Cytology Council will be held at the Drake Hotel, Chicago, on October 9, 10, and 11, 1956. The planners have developed a series of broad discussions on the practical values of this effective diagnostic technique. Address inquiries to Dr. Arthur H. Dearing, College of American Pathologists, Prudential Plaza, Suite 2115, Chicago 1, Illinois.

PAN-PACIFIC SURGICAL ASSOCIATION

THE SEVENTH Congress of the Pan-Pacific Surgical Association will be held in Honolulu, Hawaii November 14-22, 1957. All members of the profession are cordially invited to attend and are urged to make arrangements as soon as possible if they wish to be assured of adequate facilities.

An outstanding scientific program by leading surgeons with sessions in all divisions of surgery and related fields promises to be of interest to

all doctors.

Further information and brochures may be obtained by writing to Dr. F. J. Pinkerton, Director General of the Pan-Pacific Surgical Association, Room 230, Young Building, Honolulu, Hawaii.

ANNUAL ASSEMBLY IN OTOLARYNGOLOGY

The Department of Otolaryngology, University of Illinois College of Medicine, announces its Annual Assembly in Otolaryngology from October 1 through 7, 1956. The Assembly will consist of an intensive series of lectures and panels concerning advancements in otolaryngology, and evening sessions devoted to surgical anatomy of the head and neck and histopathology of the ear, nose and throat.

Interested physicians should write direct to the Department of Otolaryngology, 1835 West Polk Street, Chicago 12, Illinois.

8TH ANNUAL POSTGRADUATE ASSEMBLY OF THE ENDOCRINE SOCIETY

"8th Annual Postgraduate Assembly of the Endocrine Society to be held at the Texas Medical Center, Houston, Texas, October 22-27, 1956. The program is being given in conjunction and in cooperation with the University of Texas Postgraduate School of Medicine and The M. D. Anderson Hospital and Tumor Institute."

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*Modell, W.: The Relief of Symptoms, Philadelphia, W. B. Saunders Company, 1955, pp. 265-266.

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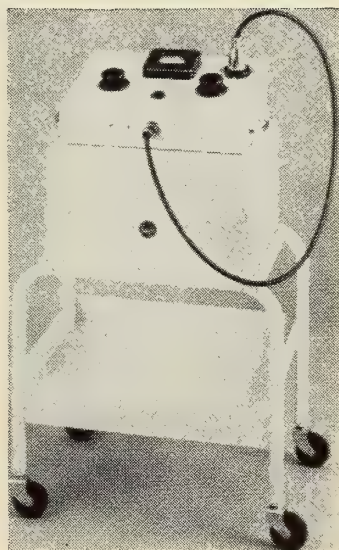
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Woman's AUXILIARY

WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION CONVENTION REPORT — JUNE 1956



Mrs. Oscar Thoeny

HEADQUARTERS for the Women's Auxiliary to the American Medical Association's 33rd convention, June 11th to 15th, was the Conrad Hilton Hotel in Chicago.

Much information was brought to us by panel discussions the first day, led off by the Round Table on Legislation, at which time your president had the honor of speaking for Arizona in presenting the legislative educational program so ably chaired by Mrs. L. D. Sprague of Pima County the past year. Arizona was singled out with four other states to tell of their activities in the field. Mr. C. Joseph Stetler, Director, Law Department of AMA, said that we should expect the major health legislation next year to have similar objectives to those we are dealing with now, as the bills are re-introduced in the new Congress if they fail of passage. He pointed out that election year is an important one because we may have new legislators, and "you should make them aware you are interested in good legislation."

A lovely tea in the Crystal Ballroom of the Sheraton-Blackstone Hotel honored Mrs. Mason G. Lawson, President, and Mrs. Robert Flanders,

President-Elect, with Woman's Auxiliaries to the Chicago Medical Society and Illinois State Medical Society as hostesses.

Mrs. Charles S. Powell of Yuma attended the breakfast at which "Today's Health" winners were announced and was delighted to accept in behalf of Mrs. William A. Phillips, Yuma chairman, second prize in counties of 19 to 35 members, a \$25 award for Yuma County.

Among state winners Arizona again won a \$40 prize for auxiliaries of 401 to 1,000 membership, reflecting the work of the state chairman, Mrs. James C. Soderstrom, Whipple, Arizona. Yavapai and Pima in More Exclusive and Exclusive Clubs helped to make this record possible.

The formal opening of the convention occurred Tuesday morning with Mrs. Lawson presiding as graciously as always. Over 400 official delegates answered to roll call from 51 auxiliaries representing 73,639 members in the states, District of Columbia, Hawaii and Alaska. Of these, 6,620 are new members gained to aid in extension of our husbands' work. We were cautioned not to wait until the year is half over to collect dues lest it seem your auxiliary is not anxious to have the person as a member. It was stated that \$161,000 in both student nurse loans and grants was placed last year. I noted that most states have 8 or 9 scholarships, so Arizona shows well. Future Nurse clubs have risen to 1,231.

At the luncheon in honor of the Past Presidents in the Williford Room, Leonard E. Read, President, Foundation for Economic Education, Inc., speaking on "The Positive Approach to Combating Socialism," said we should fight it wherever it appears — not merely in the area of medicine. He blamed those who oppose socialistic ideas for not speaking out against them with complete understanding and clarity. The solution must come, he asserted, with a restoration of faith in free men and what they can create out of their own efforts.

In her address, Mrs. Lawson told of attending



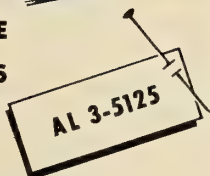
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28 state conventions and 34 other meetings among which the Traffic Safety Conference stood out. A check for \$106,000 was given the AMEF by the Auxiliary at the luncheon, and she pointed out that every cent goes to the medical schools.

Among state reports, Arizona's came second in the Western Region, and your president found two minutes short in which to even highlight a year's work. New York State won applause telling of constructing a Fair booth of burlap curtains on traverse rods lined with cotton blankets so as to show health films, interspersed with cartoons for the children. Also, it furnished a welcome place for people to sit down.

Dr. Elmer Hess, immediate Past President of the AMA, spoke to us at luncheon in the Grand Ballroom, honoring Mrs. Lawson, President, and Mrs. Flanders, President-Elect, calling the doctor's wife his best advertisement. They should be good listeners to troubles related by patients, he said, be patient, lead a Girl Scout troop, join the PTA and see that the family votes, and furthermore, "know how to keep her mouth shut and how to talk at the same time."

On Civil Defense it was brought out that the medical profession will be very influential in the final pattern set up. The coming Civil Defense program will include recruitment of nurses under the Red Cross program, which we can help stimulate. Even one newspaper release would be participation in the program, and it is well to publicize clubs' activities in Civil Defense.

A new committee is being added by our new national president, Mrs. Robert Flanders of Manchester, New Hampshire — namely, Safety. As 38,000 people are accidentally killed each year (for persons between 25 and 44, second only to heart diseases), it seems imperative. Since people are bound to have accidents, we should try to prevent the injuries. Ask for and insist on plastic vinyl foam padding installed in your car on instrument panel, safety-type steering wheel, etc., (some cars have them) and soon all cars will provide what the public demands. Half of all cars made are involved in some injury-producing incident, so it is worth your attention. Mrs. Flanders also urged auxiliary members to expand their nurse recruitment, scholarship and loan funds to include

therapists and medical technologists.

The installation of new officers and the annual dinner wound up the convention on Thursday with Ilka Chase her amusing best at the dinner. Mrs. Powell, Yuma, Mrs. J. D. Hamer, National Historian, Mrs. George G. McKhann and I from Phoenix were your delegates at the convention, and I want you to know how many times my state pin was admired by strangers and friends alike. Evidently, few have them yet and ours is distinctive. I was proud to be wearing it. I also served on the Convention Courtesy Resolutions Committee chaired by Mrs. Robert E. Dunlevy of Illinois.

Many valuable suggestions for the year's work were gleaned by Mrs. Powell and myself in the Post-Convention Conference of national officers, directors and committee chairmen with state presidents and presidents-elect on Friday, the final event of the convention. Mrs. O. Thoeny

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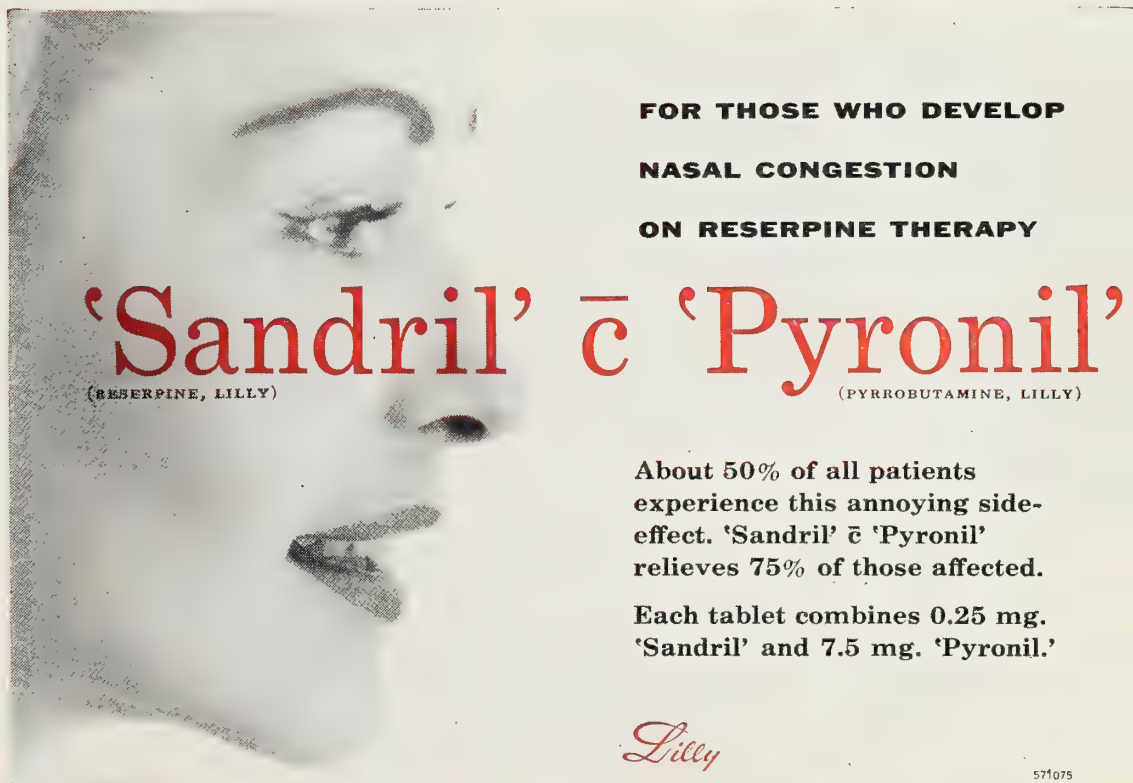
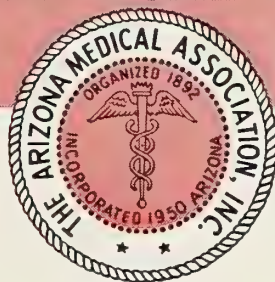
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Arizona Medicine

Journal of
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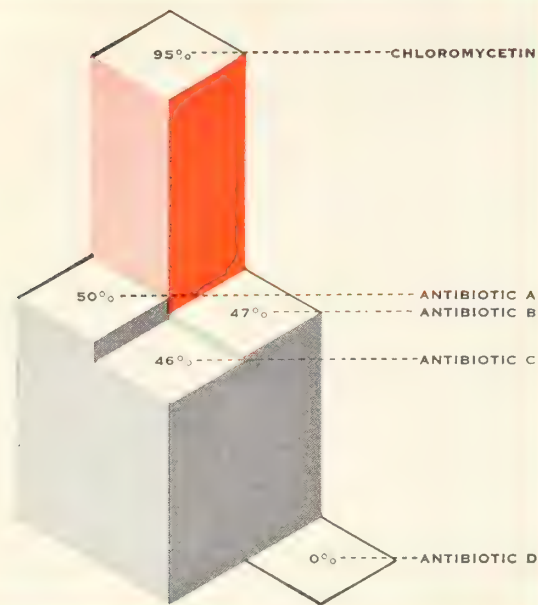
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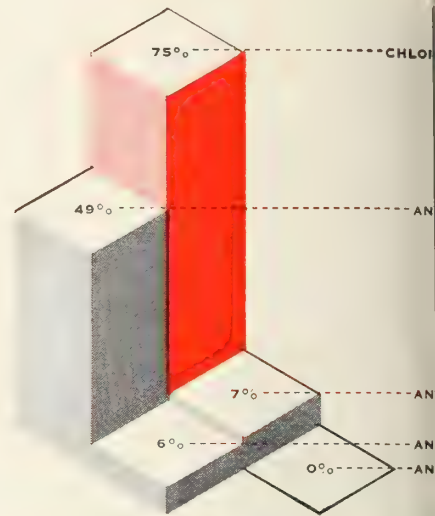
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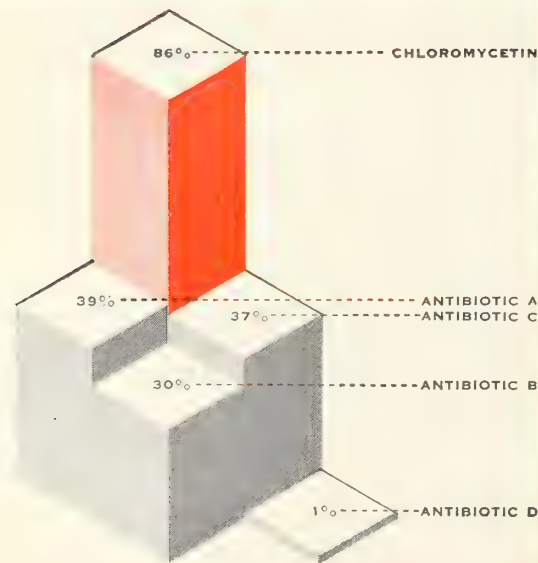


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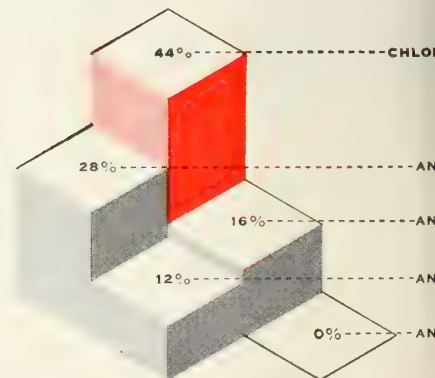


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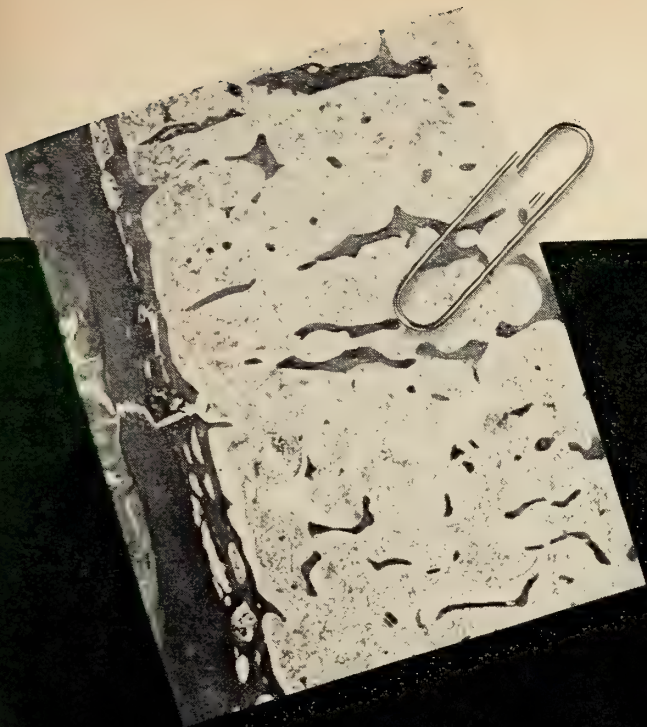
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ARIZONA MEDICINE

Journal of ARIZONA MEDICAL ASSOCIATION

VOL. 13, NO. 9



SEPTEMBER, 1956

TABLE OF CONTENTS

| | |
|--------------------------|-----|
| OFFICERS DIRECTORY | 6A |
| ADVERTISERS INDEX | 41A |

ORIGINAL ARTICLES

| | |
|--|-----|
| OTHER USES OF DIONOSIL (A PRELIMINARY REPORT) | 347 |
| Samuel L. Cohen, M.D., Phoenix, Arizona | |
| THE HEART IN CHRONIC PULMONARY DISEASE | 350 |
| Drs. L. A. Stapley & O. O. Williams, Phoenix, Arizona | |
| A TECHNIQUE OF INTRAVENOUS PENTOTHAL SODIUM-SUCCINYLCHOLINE ANESTHESIA FOR BRONCHOSCOPY AND BRONCHOGRAPHY | 352 |
| George D. Boone, M.D., Tucson, Arizona | |
| THE ACUTE SURGICAL ABDOMEN IN INFANCY AND EARLY CHILDHOOD..... | 356 |
| Charles W. McLaughlin, Jr., M.D., Omaha, Nebraska | |

MEDICAL PROBLEMS

| | |
|---|-----|
| PHOENIX CLINICAL CLUB | 360 |
| Marriner W. Merrill, M.D., Phoenix, Arizona | |

EDITORIALS

| | |
|--|-----|
| CIVIL DEFENSE ACTIVITIES | 372 |
| MEDICAL ETHICS OF THE AMERICAN MEDICAL ASSOCIATION | 373 |

TOPICS OF CURRENT MEDICAL INTEREST

| | |
|-----------------------------------|-----|
| RX., DX., AND DRS. | 376 |
| Guillermo Osler, M.D. | |
| STAFF VACANCIES | 374 |
| ORGANIZATION PAGE — Civics | 380 |
| Norman A. Ross, M.D. | |
| AMERICAN CANCER SOCIETY | 382 |
| MEETING NOTICE | 382 |
| MANUAL OF THERAPEUTIC DIETS | 384 |

WOMAN'S AUXILIARY

| | |
|---------------------------------|-----|
| A WORD FROM THE PRESIDENT | 388 |
|---------------------------------|-----|

DIRECTORY

| | |
|----------------------------|-----|
| LABORATORIES | 33A |
| DRUGGISTS DIRECTORY | 35A |
| SANATORIUM DIRECTORY | 36A |
| PHYSICIANS DIRECTORY | 38A |

ARIZONA MEDICINE

Journal of Arizona Medical Association

VOL. 13, NO. 9



SEPTEMBER, 1956

Original ARTICLES

OTHER USES OF DIONOSIL (A PRELIMINARY REPORT)

Samuel L. Cohen, M.D.
Phoenix, Arizona

IN 1922 Sicard and Forester first used iodized oil (lipiodol) and for thirty years it has remained the established medium for bronchography. Lipiodol, however, has certain disadvantages:

1. Persistence.
2. Iodism.
3. Alveolar filling.
4. Occasional allergies.
5. Difficulty in handling (proper warming, etc.)

Dionosil has recently come into use for bronchography and is a suspension of a N-propyl ester of 3:5 diodo — 4 pyridone — N acetic acid. In 1953 Tomich Basil & Davis investigated the behavior of Dionosil in the laboratory and on animal experimentation. They found that in four days the ester is completely hydrolyzed — absorbed into the blood stream and excreted without change in the urine.

Iodine or iodides are not liberated, which reduces sensitivity reactions and does not alter blood examination for iodine.

Aqueous Dionosil is a 50% suspension, buffered, and containing a sterilizing agent. Oily Dionosil is a 60% suspension in peanut oil.

Extensive animal and laboratory work showed that Dionosil could be given intramuscularly, subcutaneously or intraperitoneally and orally with no toxic effects. A large amount is necessary for it to be lethal intravenously to a mouse.

Histologic examination of lungs after bronchography showed a mild inflammatory reaction in a few cases which subsided in a few days. This is also present with lipiodol.

With Dionosil:

1. The lungs are clear in 4 days. In abscess cavities it may take 14 days to absorb.
2. The bronchi stay outlined well up to 1 hour so no hurry is necessary and coughing does not ruin the picture.
3. Alveolar filling is rare and more medium can be introduced if additional study is required.
4. The bronchi is outlined rather than filled. (Fig. 6)

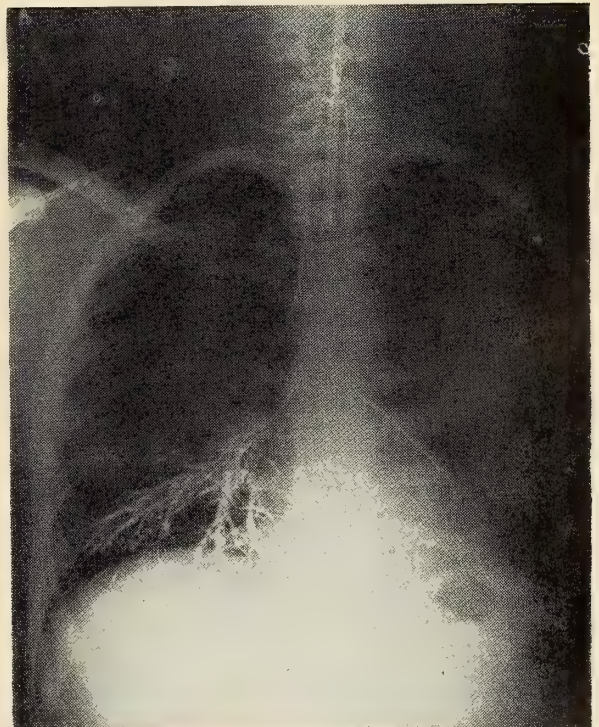


Fig. 6: A normal bronchogram with a aqueous Dionosil showing a nice mucosal picture.

Since no iodine is liberated it is safe to use with patients with tuberculosis. Sensitivity is rare and there are no delayed allergies. Side effects of Dionosil are few; we mention two.

1. Occasional rare febrile reactions occur accompanied by a cough and influenza symptoms. This lasts 1-2 days and requires no therapy.

2. An occasional bronchospasm has occurred.

The technique for Dionosil bronchograms is the same as for lipiodol.

The question arose, would Dionosil work in other types of examinations? From previous readings we knew Dionosil was non-toxic, absorbable and clung to mucosal surfaces. Strepler in 1953 used it to outline a thyroglossal duct and a tuberculous fistula.

We first tried it on a retrograde pyelogram. (Fig. 1) The patient had an obscure hematuria. Routine retrogrades with Urokon were negative. The examination with Dionosil was also negative but most important the calices, pelves and ureters remained outlined sufficiently well for re-examination in one hour. No ill effects occurred to the patient. The contrast and detail equalled that of Urokon.

Next we examined several paranasal sinus cases with excellent demonstration and outlining of the mucosa. (Fig. II)

Oily Dionosil is not recommended for these sinus films because of low rate of absorption.

We next tried it with esophageal varices. (Fig. III) Here, too, we demonstrated the varices very well up to 30 minutes. Actually, however, there was no real advantage over the thick barium except, perhaps, in cases where lower bowel obstruction or esophageal obstruction is present.

Our most recent trial was with post-operative T-tube cholangiograms. Here we have a case which I believe demonstrates the stones very well. More important, the aqueous Dionosil stays and coats the hepatic duct system and stones up to two hours allowing less hurried and more technically perfect films, and, therefore, more accurate diagnosis. No reactions occurred. The material is water soluble and can be washed from the biliary system if desired.

These few things we have done. Much more work and evaluation need to be done. We hope in the future to try the Dionosil in other examinations where an absorbable contrast material is used.

Summary

The use of Dionosil in diagnostic procedures other than bronchography is described. It is

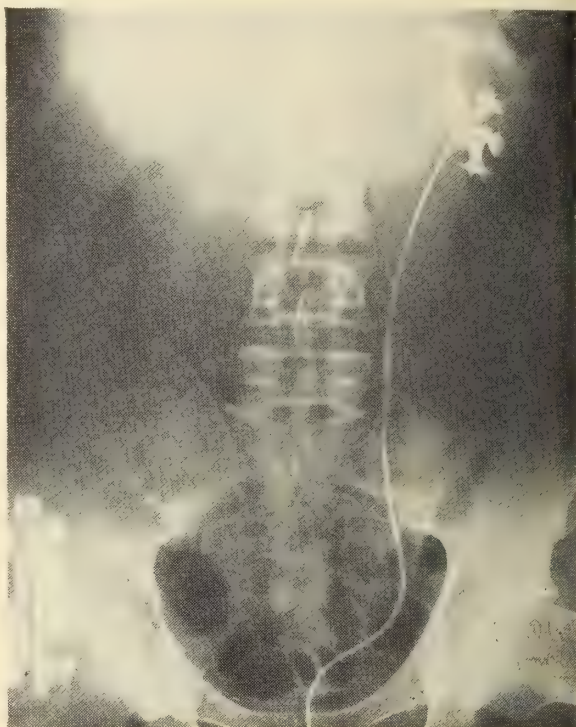


Fig. 2: Left Retrograde Pyelogram. Immediate film after use of 30% Urokon.



Fig. 2: Left Retrograde Pyelogram 30 minutes after the use of aqueous Dionosil. Note the outline of the ureter.

found of value in retrograde pyelography, visualization of nasal sinuses, esophageal varices, and cholangiograms.

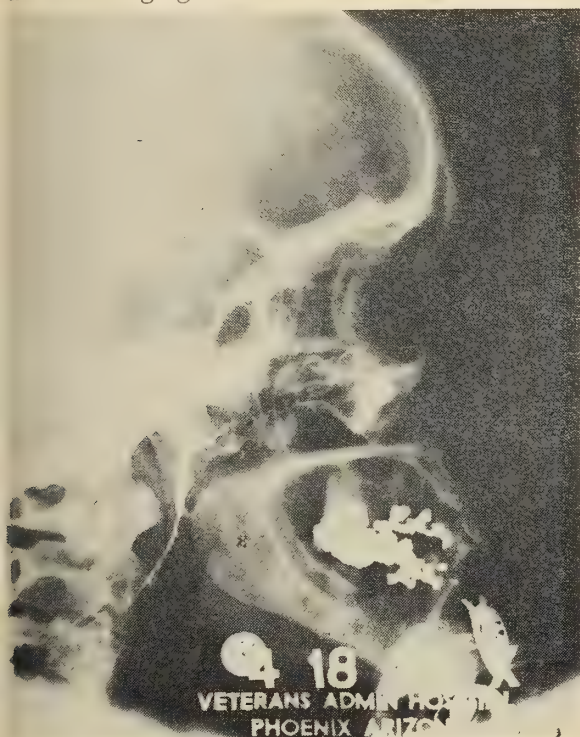


Fig. 3: Sinogram with aqueous Dionosil. Note the mucosal outline of polypoid changes.

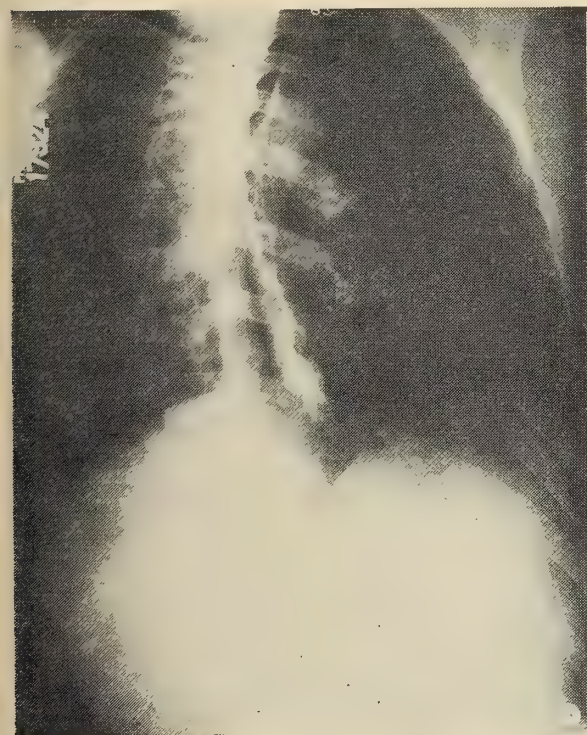


Fig. 4: Esophagram. 15 Minutes after aqueous Dionosil large varices are seen.

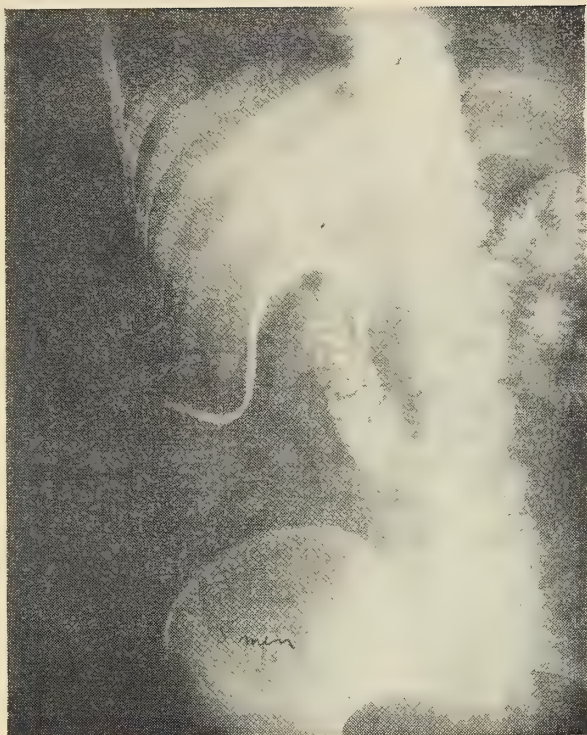


Fig. 5: T-tube Cholangiogram. The ducts and stones were nicely outlined up to 1 hour.

Further investigation is needed.

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THE HEART IN CHRONIC PULMONARY DISEASE*

by

Lorel H. Stapley, M.D.

and

Onie D. Williams, M.D.

THE physicians of the Southwest are keenly aware of the dangers of pulmonary hypertension with cor pulmonale in chronic pulmonary disease. This area, as well as other areas having low humidity warm climates, is a mecca for many people from other sections of the country with diseases causing pulmonary fibrosis, such as bronchiectasis, tuberculosis, emphysema, kyphoscoliosis and bronchial asthma. In addition, patients who have had thoracoplasty or pulmonary lobectomy frequently come to this climate in the hope of minimizing the frequency of respiratory infections which they are subject to in other sections of the country. Also, this is an area in which retirement of elderly persons with past pulmonary infections or pneumoconiosis is not uncommon. Although thoracoplasty and pneumonectomy themselves do not result in pulmonary hypertension, those persons who have undergone these procedures begin to have arterial changes which may result in cor pulmonale when they reach an older age. Other causes of pulmonary arterial obstruction which may result in cor pulmonale, but are rarely seen, include multiple small pulmonary emboli, vascular spread of tumor emboli to pulmonary arteriosclerosis. These should be kept in mind for consideration when the more obvious etiologic factors are not apparent.

Three phases of cor pulmonale might be considered. First, acute right heart failure associated with a massive infection superimposed on chronic pulmonary fibrosis and emphysema. Second, a subacute or recurrent type of right heart failure which may be apparent only with associated pulmonary infections. These may respond to treatment directed at relieving the infection, but always carry the possibility of progression into acute cor pulmonale. Third, the chronic type in which there is definite hypertrophy of the right heart and a continuous high intrapulmonary pressure resulting a pulmonary edema, pleural effusion, enlargement of the liver, ascites, and peripheral edema.

Phases of acute cor pulmonale are very seldom diagnosed at autopsy unless associated with pleural effusion, liver enlargement or ascites. Pulmonary edema and dilatation of the chambers of the right side of the heart alone are certainly insufficient findings for making an anatomical diagnosis of cor pulmonale. Pulmonary edema may be associated with respiratory infections without underlying cause for pulmonary hypertension. Furthermore, the chambers of the heart may be dilated, particularly if the heart stops in diastole. Neither measurement of the valves, nor any other criteria the pathologist may have can give a definite indication of whether the patient died from an acute right heart failure. The recurrent or subacute type of chronic right heart failure with dilatation and hypertrophy of the right heart is not so difficult to determine at autopsy. Here the evidence of myocardial hypertrophy of the right ventricle is found, as well as enlargement and chronic passive congestion of the liver, ascites, and peripheral edema.

The pathology of pulmonary hypertension is essentially that of the vascular changes associated with chronic pulmonary disease. These consist of fibrosis, narrowing, thrombosis or complete obliteration of the capillaries and arterioles. Anoxia also probably plays a significant role, both in systemic and pulmonary hypertension and hypertrophy of the heart. In a person with vascular changes associated with pulmonary fibrosis, a superimposed infection may so limit the blood supply and produce anoxia as to result in acute cor pulmonale.

We are at this time reporting 3 cases presenting features of the different types of cor pulmonale with heart failure as seen at autopsy.

Case Number 1 is an 84 year old man who entered the hospital because of pulmonary hemorrhage, anemia, and fever. At the time of admission he had a temperature of 99.2 degrees F. and a blood pressure of 120/90. During hospitalization, the patient continued to have fever up to 103.8 degrees. He was known to have bronchiectasis, and by x-ray there was

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a bronchiectatic cavity in the right apex of the lung. Spontaneous fracture of several ribs occurred during his hospital course, possibly the result of coughing. At autopsy, this patient was found to have a diffuse bronchiectasis with a bronchiectatic cavity and a fairly diffuse early bronchopneumonia. His heart weighed only 300 gms. There was considerable sclerosis of the coronary arteries, but no areas of occlusion were found, and from the appearance of the heart there was no cor pulmonale. However, there was pulmonary edema with acute congestion of the liver and abdominal ascites.

This patient apparently represents a case of acute right heart failure. The evidence consists of edema of the lungs with chronic passive congestion of the liver and ascites. Blood vessels in the lungs were not remarkable. Muscosal ulceration of a bronchus was found as the cause of his pulmonary hemorrhage.

The second case is that of a 65 year old man who entered the hospital with a chief complaint of swelling of the ankles. He had a known bronchiectasis for many years and previously had had an episode of heart failure at which time he was placed at rest and was digitalized with some improvement. At the time of admission he had been without digitalis for three years and apparently had adequate cardiac compensation. At this time, however, his condition became progressively worse and he developed orthopnea, dyspnea, ankle edema and productive cough. The liver was not total of 1,010 grams. There was marked fusiform dilatation of all bronchial passages, particularly in the lower lung lobes. There was a grade III pitting edema of the lower legs and ankles. Ascites was present, as was a slightly enlarged liver weighing 1500 gms. The heart weighed 410 gms. The myocardium of the right ventricle was approximately twice normal thickness. Microscopically, the sections of the lung showed advanced pulmonary fibrosis with areas of purulent bronchopneumonia, bullous em-

physema, and well defined thickening of the walls of the small muscular pulmonary arteries. This case represents a recurrent or subacute type of cor pulmonale with hypertrophy of the right ventricle due to past episodes of increased pulmonary hypertension. The vascular changes, while they might be secondary to pulmonary changes, in all probability were the cause of the increased tension in the pulmonary bed and subsequent cor pulmonale.

The third case is that of a 63 year old woman who entered the hospital in a critical state and died 6 hours later. She was known to have pulmonary fibrosis, bronchial asthma, emphysema and chronic right heart failure. At autopsy, the lungs weighed a total of 1,000 gms. The right upper lobe was fibrous and small and there were numerous emphysematous blebs and many cavities filled with yellow caseous material. The liver was only slightly enlarged, weighing 1350 gms. However, the heart weighed 580 gms. There was a definite grade II atherosclerosis present in the coronary arteries and a definite hypertrophy of the left ventricle. Microscopically, the lungs showed areas of vascular thrombosis, thickening of the alveolar septa and increased thickening of the walls of the smaller arteries. This case represents a chronic cor pulmonale from pulmonary emphysema resulting from asthma and showed definite pulmonary arteriolar changes.

Summary: In summary, three cases have been presented representing the phases of cor pulmonale, that is acute, subacute (recurrent), and chronic, which physicians in this area are likely to see associated with chronic pulmonary disease. Right heart failure of the acute type is rarely seen by the pathologist at autopsy, but is well known by the clinicians as a clinical entity. The more chronic phases may be superimposed on previous pulmonary fibrosis, infection or with occlusive vascular changes, similar to those seen in systemic hypertension and left ventricular hypertrophy.



A TECHNIQUE OF INTRAVENOUS PENTOTHAL SODIUM-SUCCINYLCHOLINE ANESTHESIA FOR BRONCHOSCOPY AND BRONCHOGRAPHY (A REPORT OF 600 CASES)

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BECAUSE bronchoscopy and bronchography are psychologically formidable procedures for most patients and many referring physicians, it seemed desirable to attempt to evolve a technique of intravenous anesthesia which would be safe and of minimal morbidity, would increase the efficiency of the bronchoscopist, and would give technically better bronchograms. A combination of Pentothal sodium for narcosis and amnesia with succinylcholine for muscular relaxation was considered to offer the best possibilities.

This presentation is a description of the technique used in 600 bronchoscopies and 285 bilateral bronchograms since early 1952. There have been no deaths, no serious operative or postoperative difficulties or complications, and no apparent drug or opaque medium reactions. Acceptance of the procedure by patients and referring physicians has been most gratifying.

Succinylcholine is a controllable muscle relaxant, prompt and effective, of short duration, and with minimal side effects. (1)(2) Contraindications are those conditions characterized by decreased plasma cholinesterase activity which may intensify and prolong its action, namely, severe liver damage, severe anemia, and severe malnutrition. In no patients in this series were there any apparent ill effects from the succinylcholine.

Pentothal sodium is accepted as an ultra short-acting barbiturate for intravenous use in an average dose of 1 gm., with rapid induction and limited to procedures of 15 to 20 minutes duration.(3) Contraindications are said to be liver and kidney diseases; circulatory disturbances and anemias; acidosis; extremes of age; chronic pulmonary diseases with low vital capacities; and respiratory obstructions, acute and chronic.

During the development of this technique due respect was held for the contraindications of both drugs, with particular reference to the cardio-pulmonary diseases. However, as the study progressed, accumulated evidence lessened the degree of the contraindications. Acute and chronic asthma, advanced pulmonary

emphysema, right heart strain, advanced bilateral pulmonary tuberculosis, respiratory acidosis, and other causes of marked reduction in respiratory function have proved to be no contraindication to the technique as here used. Nevertheless, experience with the technique would seem advisable before reducing the contraindications below those usually considered safe. It is reported that the spasmogenic effect of Pentothal sodium may initiate severe laryngospasm or bronchial spasm during instrumentation of the pharynx and larynx. For this reason topical anesthesia has been advised as an adjunct to intravenous barbiturate anesthesia.(4) In this series, using the combination of Pentothal sodium and succinylcholine, there were no apparent instances of laryngospasm or induced bronchospasm.

Case 1 is typical of a group of 62 patients, 60 years of age or older, with chronic bronchospastic bronchitis and advanced pulmonary emphysema on whom bronchoscopy was performed without operative or postoperative mishap. Case 2 is representative of a group of 24 children from 6 to 10 years of age, who had bronchoscopy and bronchography with similar freedom from ill effects. Case 3 characterizes a group of 75 patients on whom bronchoscopy was performed for relief of persistent status asthmaticus with no operative or postoperative morbidity.

TECHNIQUE

The operative team consists of the bronchoscopist, the anesthesiologist, a number one and a number two nurse, and an X-ray technician when bronchography is done. The bronchoscopist directs the overall pattern of the procedure. The number one nurse assists the bronchoscopist and injects the opaque medium at bronchography. The number two nurse holds the head at bronchoscopy and assists in positioning the patient during bronchography. In bronchography the patient reclines on the horizontal fluoroscopy table. Bronchography is always preceded by bron-

choscopy. This has proved to be advantageous in cleansing the bronchi for better distribution of the opaque medium as well as for diagnosis and therapy. Usually no preoperative medication is used unless the presence of bronchospasm indicates the need for Aminophyllin either intravenously or by suppository. If the patient has received cortico-steroids, 100 mg. of Solu-Cortef is given intravenously about one hour preoperatively. An occasional patient requires Dramamine, 25 mg. intramuscularly for alleviation of postoperative nausea.

The infusion set consists of a 20 c.c. syringe with a three-way petcock attached via a short plastic or rubber tube to a 20 gauge needle. The flask of succinylcholine, suspended from an adjustable intravenous stand, is connected to the petcock with plastic tubing. The syringe is filled with 2½% Pentothal sodium solution, the needle is inserted into a vein in the right forearm, and both needle and syringe are securely affixed to the forearm by 1-inch adhesive. The forearm is then firmly strapped to the armboard.

Induction is accomplished by injecting 8-10 c.c. Pentothal sodium, depending upon the patient's weight and the usual anesthesia variables. When bronchoscopy is done for status asthmaticus or on any patient with severe respiratory disability, the minimum amount of Pentothal necessary for amnesia is used. The succinylcholine drip is then allowed to run at 40 to 50 drops per minute. From this point on respiration is either controlled, assisted, or by diffusion; therefore it is not important that respiratory effort be maintained. Respirations are assisted or controlled by manual compression of the breathing bag filled with 100% oxygen for 30 to 60 seconds until maximum oxygenation is obtained and carbon dioxide is worked out. With sufficient muscular relaxation, the patient is positioned for bronchoscopy by placing a folded pillow posterior to the mid-dorsal back, with the number two nurse supporting the head. One hundred per cent oxygen delivered at 8-10 liters per minute through the side-arm of the scope maintains oxygenation by diffusion respiration sufficiently to permit bronchoscopy of average duration. If a longer procedure is required, diaphragm contractions can be initiated by slowing or stopping the succinylcholine drip. Coughing and straining to deliver secretions to the range of the broncho-

scope may be continued for long periods with considerable patient activity and with complete amnesia. Three or 4 cc. of Pentothal solution may be injected intermittently as needed and the flow of succinylcholine varied according to the degree of relaxation desired. If the bronchoscopy is prolonged and progressive bradycardia develops the scope is withdrawn, the anesthesiologist re-oxygenates the patient, and the scope is reinserted. This is rarely necessary. If bradycardia seems to be incident to vago-vagal reflex, 1/150 gr. of atropine sulfate is given via the intravenous tube. If bronchial secretions obstruct the airways and the patient's cardiopulmonary status is poor, he is intubated, suctioned and thoroughly respired, and then the bronchoscopist proceeds.

When bronchography is planned, the patient lies supine on the horizontal fluoroscopy table and bronchoscopy is performed as already described. The anesthesiologist then inserts a cuffed endotracheal tube and the cuff is adequately inflated. A bite block is placed and a strip of 1-inch adhesive with each end bifurcated for several inches is passed around the neck and the ends secured to the bite block and the tube. The oxygen system is attached to the endotracheal tube and manual compression of the oxygen bag is resumed. An 18-inch-long segment of a size 16 French K-10 Kaslow plastic stomach tube attached to the syringe containing the opaque medium is passed through the orifice of the nipple of the right angle endotracheal connector. Hereafter the bronchoscopist directs the procedure and operates the fluoroscopic screen. The patient is placed in the right posterior oblique position with a supporting pillow under the left hip and the number two nurse holding the arms extended to the right. As the bronchoscopist fluoroscopically visualizes the plastic tube it is passed by the anesthesiologist to the desired point in the right bronchus. This is easily accomplished in a large percentage of attempts; if not, it is partially withdrawn and reinserted until in the proper place. Usually, with the tip of the plastic tube at the level of the bronchus intermedius, 10 c.c. of the opaque medium are injected rapidly while the anesthesiologist exerts added pressure on the oxygen bag. The opaque medium is seen to distribute readily throughout the right bronchial tree as the patient is simultaneously rotated toward

the right lateral or even the prone position to insure filling of anterior branches. In the presence of localized or general impairment in pulmonary dynamics or with bronchospasm or bronchostenosis, the opaque medium may not distribute uniformly, necessitating repositioning of the tube and/or instillation of more opaque medium. Frequently, added pressure on the oxygen bag at this point is helpful. Otherwise, coincident with opaque medium instillation and until bronchograms are made, the anesthesiologist maintains only very shallow respirations to avoid distribution of the opaque medium to the alveoli. Occasionally, when a segment or lobe, because of disease, accepts the opaque medium reluctantly with other areas adequately filled, roentgenographic exposures are made and then more oil instilled. With fluoroscopic evidence of adequate filling, the lights are turned on and the patient placed in the right lateral position, the number two nurse holding both arms extended to the right. When the X-ray technician is ready for a Bucky exposure, the anesthesiologist exerts firm pressure on the filled oxygen bag, stopping all respiratory motion at full inspiration. The technician, at a signal from the anesthesiologist, makes the exposure. Studies with the oscillograph reveal a marked bradycardia during this period which has proven to be of no hazard.⁽⁵⁾ The bradycardia is conducive to technically better roentgenograms with no blurring from heart motion. The anesthesiologist then fully respirates the patient several times and a second right lateral exposure is made. Right posterior oblique exposures are similarly made if desired. The patient is then turned to the left posterior semi-oblique position with a supporting pillow under the right hip and with the number two nurse holding both extended arms to the left. The room is darkened, the plastic tube is partially withdrawn, and the anesthesiologist passes the tube into the left bronchus, utilizing its natural curve. If this is unsuccessful after a few attempts, the tube is withdrawn until its end is at the lower end of the trachea. Under fluoroscopic vision the bronchoscopist then directs instillation of the opaque medium as on the right. With adequate filling, the light is turned on and a left posterior semi-oblique exposure is made. The anesthesiologist then fully respirates the patient several times and a second left posterior semi-oblique and an-

terior-posterior exposure is made. If desired, a post-tussive exposure is made after the patient awakens. Occasionally, in patients with multiple areas of bronchiectasis, information as to tussive emptying of opaque medium is obtained by an exposure several hours later. Upon conclusion of bronchography, controlled respiration is maintained, with intravenous solutions discontinued, until patient resumes normal respirations and he is responding. This usually requires only a few minutes. The trachea and bronchi are repeatedly aspirated with a catheter through the endotracheal tube until thorough coughing is elicited. The endotracheal tube is then removed with adequate toiletry of the nasopharynx and mouth. The patient is kept under constant surveillance until he is fully awake, with repeated cleansing of airways as necessary.

CONCLUSIONS

Contrary to general opinion, intravenous Pentothal sodium and succinylcholine may be safely used as an anesthesia for bronchoscopy and bronchography. In a series of 600 bronchoscopies and 285 bilateral bronchograms there were no deaths, no serious operative or post-operative difficulties or complications, and no apparent drug or opaque medium reactions. With careful attention to the details of the procedure as here described, the usual contraindications to intravenous Pentothal sodium in patients with severe cardiopulmonary disability may be considerably reduced. Patients and referring physicians are enthusiastic over the absence of discomfort as contrasted with topical anesthesia. The bronchoscopist can be more thorough and bronchograms are technically better.

Case 1.—

A 73-year-old white male with severe dyspnea, orthopnea, and intractable cough to the point of exhaustion, gave a history of chronic bronchospastic bronchitis and far-advanced pulmonary emphysema of 13 years duration. Examination revealed evidence of marked "wetness" of the tracheobronchial tree with inspiratory and expiratory wheezing not relieved by much medication, including cortico-steroids. There was electrocardiographic evidence of right heart strain. Vital capacity was 47% of normal in 8 seconds, increasing to 53% of normal after aerosol Isuprel with the Bennett intermittent positive pressure apparatus. Maximum breathing capacity was 20% of normal, with no increase

after aerosol Isuprel. Oxygen resaturation time (Oximeter) was 70 seconds (normal 10 to 20 seconds). Bronchoscopy for aspiration of accumulated tracheobronchial secretions was done with the patient anesthetized with Pentothal sodium and succinylcholine. Aspiration was continued with intermittent coughing induced by ether insufflation until no more secretions were obtainable. During the 30 minute procedure, 250 mg. of Pentothal sodium were used. Very little succinylcholine was used after the passage of the scope. The patient had no operative or postoperative ill effects and he left the hospital 48 hours later with all respiratory symptoms markedly relieved. One week later vital capacity was 60% of normal and maximum breathing capacity was 40% of normal.

Case 2.—

A 7-year-old white male gave a history of repeated febrile respiratory episodes beginning in babyhood. There had been a persistent chronic cough productive of copious quantities of purulent sputum only partially controlled by frequent use of antibiotics. He was markedly undernourished, cough was frequent and "rattly," and rales were heard over both lungs. Vital capacity and maximum breathing capacity were 40% of normal with no increase after aerosol Isuprel. Gamma globulin was normal, as was the film test for fibrocystic disease of the pancreas. Bronchoscopy and bronchography were done with intravenous Pentothal sodium-succinylcholine anesthesia. Purulent material was observed emanating from all orifices, especially from the orifice of the right upper lobe bronchus. Figures 1 and 2 depict the right lateral and left posterior semi-oblique bronchograms. The patient had no ill effects from the procedure and he was discharged from the hospital on the following morning.

Case 3.—

A 42-year-old white male had been in severe status asthmaticus for ten days. After 3 days of continuous intravenous Aminophyllin and ACTH in 5% glucose in water, the status had not improved and he was becoming exhausted. Similar episodes had occurred at approximately sixty day intervals during the past 2 years. Bronchography had revealed a chronic bronch-spastic bronchitis. During a remission the vital capacity was 60% of normal in 7 seconds and the maximum breathing capacity was 45% of normal. Using intravenous Pentothal sodium-succinylcholine

anesthesia, bronchoscopy was done. With repeated coughing induced by the insufflation of ether, much frothy mucopurulent material was aspirated. During the 40 minute procedure, 350 mg. of Pentothal sodium were used. Very little succinylcholine was required after the introduc-

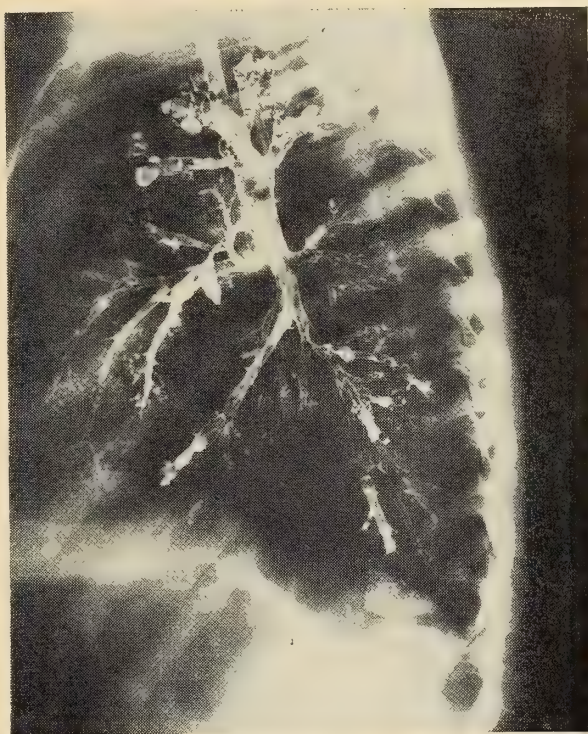


Fig. 1 — Right lateral bronchogram of Case 2. Importance of upper lobe filling is illustrated.

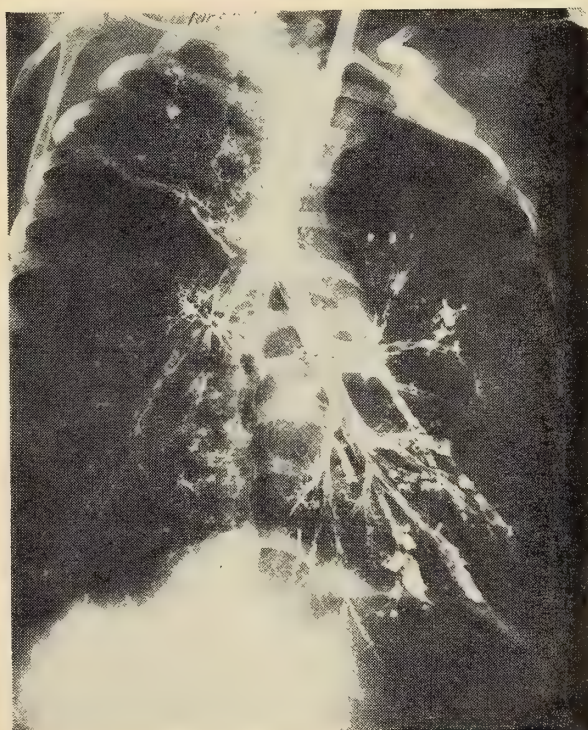


Fig. 2 — Left posterior semi-oblique bronchogram in Case 2.

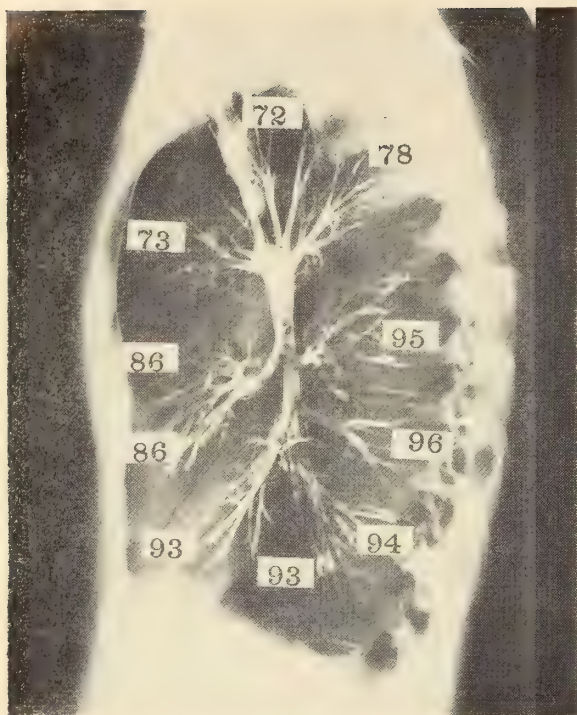


Fig. 3 - Right lateral bronchogram using Viscidol as the opaque medium. Superimposed numbers indicate the percentage of satisfactory filling with opaque medium of each respective bronchopulmonary segment in 285 bronchograms.

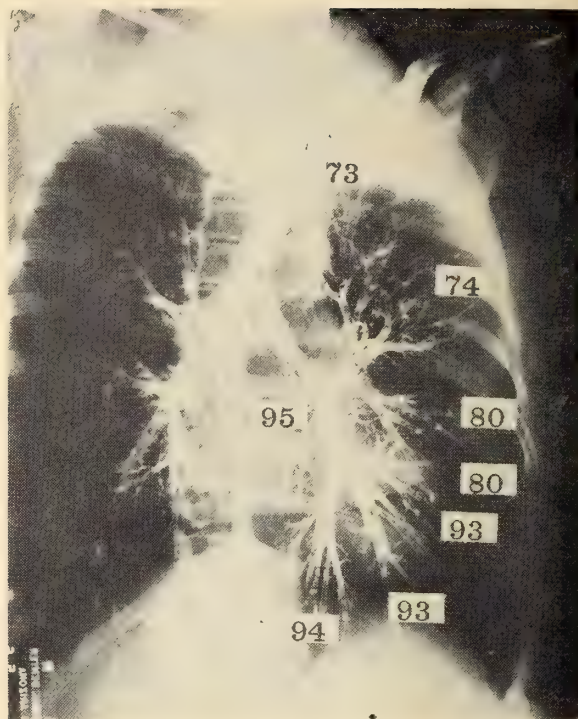


Fig. 4 - Left posterior semi-oblique bronchogram using Lipiodol as the opaque medium. Superimposed numbers indicate the percentage of satisfactory filling with opaque medium of each respective bronchopulmonary segment in 285 bronchograms.

tion of the bronchoscope. Although he was only semiconscious during most of the procedure, he had no memory of it. Twenty-four hours later the status had broken and on the following day he was discharged markedly improved. In spite of the status asthmaticus, there were no ill effects from the anesthesia.

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THE ACUTE SURGICAL ABDOMEN IN INFANCY AND EARLY CHILDHOOD

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A CONSIDERATION of abdominal emergencies in infancy and early childhood is essentially a presentation of acute intestinal obstruction in this age group, with a lesser number of cases incident to inflammatory disease, trauma or hemorrhage. During the past twenty-five years this subject has attracted increasing interest with encouraging results in surgical treatment. Many of these problems are congenital and while some are hopeless from a corrective standpoint many are either partially or wholly remedial. This group of cases, therefore, presents a challenge to the surgeon with many disappointments but with a constantly increasing number of successful results.

The most arresting lesion seen in the newborn

group is the omphalocele. While not essentially an obstructive lesion, these are surgical problems of the most urgent type. These congenital herniae may vary in size from very small, readily repaired defects to almost complete absence of the abdominal wall. Early repair is essential. We prefer to open the sac to permit inspection of the abdominal viscera for associated abnormalities. When tension incident to closure may be hazardous, the two stage method initially closing the skin, with secondary muscle-fascia closure months later, is certainly the method of choice.

In a personal series of 350 patients with acute intestinal obstruction, 83 patients or 24 percent were infants from birth to the age of three

years. These infants were all seen as abdominal emergencies and may be divided under several headings.

Duodenal obstruction, either complete or partial, was observed in 13 infants, the average age on admission being 11 days. The presenting symptom was that of intermittent vomiting since birth, usually projectile in character and containing bile in the majority of instances. Abdominal distention except in the epigastrium was not a feature. Visible peristaltic waves were noted across the upper abdomen in 10 of the 13 patients. A flat abdominal plate usually disclosed a dilated stomach and in some a markedly distended duodenum with little or no gas in the small bowel. Clinically, pyloric stenosis was excluded by the onset of symptoms at birth and the presence of bile in the vomitus.

In 5 of the 13 patients with duodenal obstruction the occluding duodenal band was associated with malrotation of the colon. In 4 cases the peritoneal band occluding the duodenum was not associated with a malrotation of the large bowel. The four remaining cases resulted from various causes including two cases of duodenal atresia, one of non-specific acute duodenitis and one anular pancreas.

Simple division of congenital peritoneal bands was carried out in eight patients. Gastrojejunostomy was performed in four and gastroduodenostomy in one. Three infants succumbed, a mortality rate of 23 percent.

Seventeen infant patients with small bowel obstruction were encountered requiring 20 operative procedures. This group of infants varied in age from one day to two years, the average being six weeks. Symptoms had been present on admission for an average of 8 days.

Intermittent vomiting was again the presenting symptom. Abdominal distention accompanied by varying degrees of dehydration were the principal findings in this group. X-ray examination disclosed small bowel distention with fluid levels in all instances.

In 10 of the 17 patients the obstruction was congenital in origin; in 4 due to acquired peritoneal bands and in 3 it was inflammatory in nature. Specifically the obstruction resulted from congenital and acquired adhesions, volvulus, meconium ileus and congenital atresia and stenosis.

The surgical procedures employed were decompression (5 patients); division of bands (4

patients) and resection or short circuiting procedures (8 patients).

The results in this group were most discouraging in that there were 9 deaths resulting in a mortality of 52.9 percent. Volvulus, meconium ileus, and multiple atresias of the small bowel were responsible for the high mortality. With improvement in technique the results in single intestinal atresias are encouraging.

Meconium ileus remains a distressing condition for which we to date have no satisfactory solution. The systemic character of the disease with fibrocystic changes in the pancreas and an alteration of the mucous glands in both the respiratory and intestinal tracts very often defeat one's best efforts even if temporary improvement results from resection, exteriorization or short circuiting procedures.

Twenty-three patients with intussusception were admitted to the hospital with an average age of 13 months. The mean duration of symptoms for the group was 33 hours but it is very significant that this figure was 60 hours in those cases which resection was required.

In 21 cases the intussusception was ileo-colic in type, in one instance ileo-ileal and in one entirely colic. Barium enemas were routinely used preoperatively for confirmation of the diagnosis and for partial reduction of the classical ileo-colic type. In no instance was the barium enema alone used as the therapeutic measure. We are aware of the practice in some clinics of avoiding operation if the terminal ileum is well visualized.

In 15 of the 23 patients the intussusception was reduced manually while resection was necessary in 8 instances. There were 3 deaths in the entire group — or a 12.6 percent mortality. Two of the 3 fatalities followed resection, 1 from shock and 1 from a post-operative pulmonary complication. The third death resulted from gangrene of the ileum occurring on the fifth post-operative day, apparently due to vascular thrombosis after a simple reduction of an ileo-colic invagination.

Our experience with these infants confirms the prognostic significance of the duration of symptoms and the pre-operative temperature. The late cases with distention and a temperature above 102 degrees after hydration have generally required resection. In these infants the decision to proceed with resection should be made promptly without undue trauma or ma-

nipulation. We feel that if one cannot accomplish the reduction promptly with gentleness, utilizing the various accepted methods, it is better to proceed immediately with resection.

Six patients with imperforate anus were included in this series, the average age being 24 hours on admission. Until recently x-ray examination was always made with the child in the inverted position to estimate the length of the defect. Accurate information can only be obtained by this study when abdominal distention is marked. The same information may be obtained prior to the development of distention by forcibly flexing the thighs on the abdomen and in this way increasing intra-abdominal distention and thus force the blind lower intestinal segment as far as possible into the perineum.

In 4 cases the perineal defect was less than 2.5 cm. and perineal continuity of the bowel was re-established. In the remaining two the rectal pouch ended blindly above the pelvic peritoneum necessitating exploration and colostomy.

It is our practice to explore abdominally all infants with a perineal defect longer than 2.5 cm. In well developed babies of normal weight a primary attempt may be made at this operation to re-establish intestinal continuity from above. In premature and underweight infants we favor colostomy alone at the primary operation with a subsequent procedure to bring the rectal pouch into the perineum.

In this small series there was one death, a mortality of 16.6 percent. This infant had, in addition to its imperforate anus, multiple congenital defects of its urogenital system.

Incarceration is the most common complication of inguinal hernia in this age group whereas strangulation rarely occurs. In our own series of 298 infant herniae, 26 patients varied in age from one day to three years but 69 percent of the group were under three months of age. In this group 73 percent were male infants and 27 percent females. Symptoms had been present on admission for an average of 10 hours.

The classical symptoms were those of a painful irreducible swelling in the groin in a very fretful infant. In only one instance was abdominal distention noted. This is one type of obstructive lesion which is usually seen very early and offers relatively little problem in differential diagnosis. Hydrocele and inguinal

adenitis are the two principal conditions to be excluded.

In 5 cases of this series the hernia reduced while anesthesia was being induced but the operation was proceeded with in each instance. In those small patients in which reduction occurs after hospital admission prior to surgery, operation is always advised during the hospital stay, but a delay of two or three days is helpful to permit edema in the canal to subside.

In the 26 cases which were operated upon as surgical emergencies, red but viable ileum was found in the sac in 16 cases, the cecum and appendix in two cases and the tube and ovary in eight cases. In one of the latter infants, the tube and ovary were gangrenous necessitating removal — this being the only instance of non-viable tissue encountered.

Surgical reduction with high sac ligation and a limited Fergusson repair was carried out in all 26 infants without mortality.

Peptic ulcer, while admittedly a rare lesion in this age group, occurs somewhat more frequently in infancy than in childhood. Gross estimates that approximately 350 instances of this condition have been recorded in the literature.

Peptic ulcer in infancy is relatively asymptomatic and in a high percentage of cases the lesion is unsuspected until the time of autopsy. Peptic ulcers in the very young may give rise to (1) Malnutrition and repeated gastric upsets; (2) Exsanguinating or even fatal hemorrhage; (3) Perforation into the general peritoneal cavity; (4) Mechanical obstruction from cicatricial tissue near the pylorus. In general severe bleeding or perforation is more common in the infant while obstructive symptoms are more apt to appear in older children.

We have observed but one instance of a perforated peptic ulcer in a female infant two days of age. It became fretful and developed rather marked abdominal distention with muscle guard soon after birth. Abdominal plates in the flat and upright position disclosed a large quantity of free air beneath both diaphragms. At operation a perforated gastric ulcer on the lesser curvature was found and closed by simple suture with prompt recovery of the infant.

Acute appendicitis remains the most common urgent abdominal condition requiring surgical intervention in the pediatric age group. In a compilation of 586 consecutive laparotomies in

infancy and childhood at the Childrens Memorial Hospital in Omaha, acute appendicitis was the surgical diagnosis in 300 cases or 51 percent, followed by intussusception, (42 cases), 7 percent; intestinal atresia and stenosis, (27 cases) 4.6 percent; traumatic abdominal lesions, (18 cases) 3 percent; Meckel's diverticulum (17 cases) 2.9 percent and incarcerated hernia 2.7 percent.

It is well appreciated that acute appendicitis is rare under the age of one year and quite infrequent before the second year. Thereafter through the years of childhood it rapidly increases in frequency. In our own series only 6 cases were seen under the age of two years, the highest instance being noted between the eighth and tenth years.

An analysis of symptoms is difficult to evaluate when many of the patients are admitted before the sixth year. It is noteworthy, however, that when a good history is obtainable it follows the classical accepted sequence of Cope in 74 percent of the entire series. If one considers only those cases found to have diffuse suppurative appendicitis, perforation or abscess, the classical symptom complex was elicited in 90 percent of these small patients.

The only reliable physical finding we have come to depend upon is localized tenderness with or without muscle guard or rigidity. This finding in the infant and childhood group is quite as reliable as in older patients and was the one physical finding consistently present in the series. When combined with rectal examination which may be very helpful in this group of young patients, the necessary information may usually be obtained on examination.

This group of cases was operated upon by the attending surgical staff of the Childrens Memorial Hospital so that there was some difference in the technical management of the series. A McBurney incision was employed in 60 percent, a transverse incision in 17 percent, a right rectus incision in 15 percent and a Davis or paramedian incision in 8 percent. The appendiceal stump was simply ligated in 87 percent and inverted following ligation in 13 percent. Of those cases which were perforated but without a definite abscess 58 percent were closed with drains into the peritoneal cavity. The remaining cases in the perforated group without abscess were closed tight without serious complications.

The 10 cases of appendiceal abscess merit comment. They had been ill on an average of 6½ days on admission and some were toxic when first seen on the surgical service. After suitable preparation with fluids, blood if indicated, and antibiotics, 8 of these 10 cases were operated upon. In 3 only drainage of the appendiceal abscess was accomplished with subsequent appendectomy 3 months later. In 5 of 8 cases primary appendectomy with drainage of the abscess was carried out. Two cases were handled conservatively with resolution of the abscess and the recommendation that subsequent appendectomy be performed. It is noteworthy that these 2 cases have not returned for secondary appendectomy and this definitely represents one of the hazards of this method of treatment if one does not have an understanding and cooperative family.

In this series of cases of acute appendicitis including those with perforation and abscess there was no mortality. This improved picture in acute appendicitis is due to prompt surgery when indicated, better anesthesia and a general understanding of fluid balance and antibiotic therapy.

Any discussion of the acute surgical abdomen in infancy and early childhood would be incomplete without reference to the problem of massive intestinal bleeding in this age group. In general if blood dyscrasias are excluded, extensive rectal bleeding in infancy and early childhood results from (1) Intussusception; (2) Meckel's diverticulum with ulceration and (3) Rectal polyps with bleeding. In our experience intussusception and rectal polyps can be readily excluded by accepted diagnostic means but the diagnosis of a bleeding Meckel's diverticulum is usually made by exclusion. We believe that if the other common causes are not demonstrated, exploration is indicated with a tentative diagnosis of a bleeding Meckel's diverticulum.

DISCUSSION

The diagnosis and treatment of abdominal emergencies in infancy and early childhood offer a challenge in mechanics and physiology for those interested in pediatric surgery. History often may be limited and information must, on occasion be obtained largely by physical examination and through competent x-ray assistance.

There are certain principles in the management of these patients which must be constantly

followed if a lowered mortality is to be obtained. The surgeon must realize that the physiologic balance in the newborn and young infant has not had time to develop its resources and this is especially true in the premature. One must accept an instability of temperature regulation, low respiratory and cardiac reserve, relatively low values for plasma proteins and a tendency to electrolyte imbalance.

Blood and intravenous fluids are necessary in the pre- and post-operative periods in practically all newborn and infants requiring major surgical procedures. Since the infant has a limited cardiac reserve and marked susceptibility to edema, fluids should be given by slow drip preferably through a polythene cannula in the long saphenous vein. We agree that more harm is done by giving too much fluid than by keeping these small patients on the dry side. Electrolytes should be limited because the immature kidney has limited ability to excrete these substances. A working rule in small infants is to give 35 to 50 cc. per pound every 24 hours by the intravenous route, using 10 percent glucose in water. The amount of saline solution administered should vary from 1/6 to 1/3 of the total daily fluid volume, depending upon chloride loss through vomiting or gastric suction. Blood must always be available and we routinely transfuse all infants undergoing major surgical procedures, giving 10 cc. per pound of body weight.

Decompression of the small bowel by suction is rarely feasible but gastric lavage is essential to assure an empty stomach during anesthesia and to facilitate exploration. Before and after operation, intermittent gastric aspiration, using a No. 8 urethral catheter, is preferable in the premature. In infants of normal development a Levins tube with Wagensteen suction may be safely employed, provided it be withdrawn in 48 hours.

Adequate anesthesia, usually with open drop ether or Cyclopropane is essential and an experienced anesthetist who can vary the depth as required is an invaluable aid. A high oxygen level, both during operation and in the post-operative period must be provided.

Incisions employed should be ample for adequate exploration to avoid undue trauma through retraction. In malrotation, volvulus and the atresias it is usually expedient and necessary to deliver the entire small bowel and a portion of the colon to permit orientation and repair.

Enterostomy and exteriorizing procedures should be avoided if possible in the surgery of infants. The early re-establishment of intestinal continuity is most desirable to reduce fluid loss and permit early feedings.

Time is an important factor and gentleness with the rapid performance of a procedure will carry many seemingly hopeless problems through to recovery.

PHOENIX *Clinical* CLUB

The Case History in this discussion is selected from the Case Records of the Massachusetts General Hospital, and reprinted from the New England Journal of Medicine. The discussant under Differential Diagnosis is a member of the staff of the Massachusetts General Hospital. The other discussants are members of the Phoenix Clinical Club.

MASSACHUSETTS GENERAL HOSPITAL PRESENTATION OF CASE

A 28 YEAR old man was admitted to another hospital on March 13, 1951 because of fits and unconsciousness of 45 minutes duration. On the day prior to his admission he complained of

chilly feelings, headache, and chest pain, and reported to the physician at his place of employment. He was found to have a slightly elevated temperature and was sent home. Three-quarters of an hour prior to his admission, his wife found him convulsing and brought him directly to the hospital.

Past History: In April 1945, while in Germany with the Army, he developed slowly progressing stupor, with headaches, nausea, vomiting and diplopia. A diagnosis of brain tumor was made and he was transferred to an army hospital. Investigation there revealed some chest abnormalities as well, and biopsy of a supra-clavicular node yielded the report "Hodgkin's paraganuloma." Radiation was given to the

chest and head (amount and physical factors not available).

Except for occasional severe headaches he got along well until February 1947 when he had a seizure. This began in the left hand and progressed to involve all extremities. The frequent recurrence of such seizures led to his admission to a naval hospital in August 1947, where he was given a course of radiation to the head. During the radiation treatments he developed a partial paralysis of his right lower facial muscles, but this cleared after a few weeks. In addition to the seizures described above, he developed six to eight attacks a day in the course of which he stared into space, ceased all activity, and was oblivious to his surroundings. Later he had no memory of such episodes. At times he put his clothes on backwards. Tridione was given for these attacks but the frequency of grand mal attacks increased so alarmingly that this drug was discontinued.

His seizures continued every three or four months, and in 1949 he noted "dancing lights" prior to the convulsions. He remained well otherwise and was able to work.

In April 1950, during the course of an upper respiratory infection, he had a much more severe attack than usual. He was admitted to the Boston City Hospital. A lumbar puncture done at this admission showed an initial pressure of 140 mm., 8 lymphocytes, negative Pandy, total protein of 43 mg. per cent, and a gold sol of 122211100. The blood and cerebrospinal fluid Hinton were negative. After discharge he had no further seizures until the present illness, except for occasional "staring spells."

Physical examination: Temp. 107°F. Pulse 160. Blood pressure 70/30. The patient was slightly obese. He was convulsing almost continually when first seen, and there were clonic movements of both arms and legs. The seizures lasted three to five minutes, and recurred after 30 seconds. During these brief intervals of freedom from seizures, the arms were held in semiflexion and the legs in extension. The eyes were closed and the jaws clenched; the patient was very cyanotic and there was a pink froth coming from his mouth and nose.

The left pupil was dilated and neither pupil reacted to light. The optic fundi were natural. No reflexes were obtainable.

No skin rash or adenopathy was found. The lungs were clear, the heart was not enlarged.

The abdomen was negative except for the liver which was palpable two fingers below the costal margin.

A mouth gag was put in place and administration of nasal oxygen was started. Suction was used frequently. Fifteen minutes after admission he was given 3¾ gr. of sodium Amythal intravenously, with prompt cessation of seizures. Carotid sinus pressure failed to show the heart rate. An electrocardiogram showed only auricular tachycardia. Sponging with ice and alcohol failed to reduce the temperature, which remained at 107°F.

Although free of seizures for the next two hours, he remained unconscious. Seizures started again with clonic jerking of the right arm, followed in a few minutes by less intense clonic movements of the left arm. These became generalized and lasted for five minutes after which he was given 5 gr. of sodium Luminal.

Respiration ceased shortly after this. Heart sounds became slow, faint, and irregular, and he expired, two and a half hours after admission to the hospital.

Dr. Marriner W. Merrill

The case for discussion today is interesting from many standpoints, not the least of which is that I am afraid it may contain what is popularly known as a "red herring." It involves a young man who died apparently in status epilepticus after an illness that lasted for six years, first appearing when the young man was in the army. At that time he developed symptoms highly suggestive of a brain tumor, including headaches, stupor, nausea, vomiting and diplopia. When examined, however, enlarged lymph nodes were found in the neck and he had some chest abnormalities as well, the details of these findings being left pretty much to the imagination. We do know that a cervical node biopsy was reported as a Hodgkin's paraneoplasia and that subsequent X-ray therapy to the head and chest gave him almost complete remission of his symptoms for a period of nearly two years. He then developed epilepsy and his seizures became frequent and severe enough to require hospitalization, at which time he was given another course of X-ray therapy to the head. From then until his death patient had various types of seizures or spells and was hospitalized one more time when a lumbar puncture was done that failed to throw much light on the situation. Following the spinal tap

MAPS

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¹January, H. L. et al: Clinical experience with tetracycline. *Antibiotics Annual* 1954-55, p. 625.



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he remained able to work for about a year, when some sort of an infection, probably respiratory, seemed to initiate the final episode of convulsive seizures.

The differential diagnosis of this problem seems to me to fall into three categories. First, did this man have Hodgkin's disease and was an extension of this pathological condition to the brain responsible for his death? Secondly, was the diagnosis of Hodgkin's paraganuloma wrongly made and did the patient actually have some other primary lesion of the brain which progressed to a fatal termination? Or, third, was the cause of death unrelated pathologically to either Hodgkin's disease or a primary brain lesion?

Let us consider Hodgkin's disease first. This man apparently did have a number of things which seem to be highly suggestive that this pathological entity existed. He had enlarged nodes in his neck, some chest abnormalities and most conclusive of all, if we are going to accept the pathologist's report, he had a positive biopsy report. This entire situation may be a red herring, but it is hard to discount. Then, as we all know, Hodgkin's disease has many and protean manifestations and involves many different tissues and areas of the body, including the brain and the central nervous system. Furthermore, in many substantiated cases, X-ray therapy has induced remissions in this disease for many years. On the whole, I find it difficult to say this man did not have this disease. Whether or not a progression of the intracranial involvement was responsible for the development of epilepsy and the terminal episode may well be another matter, however.

If we are going to consider that this man had some other intracranial lesion besides Hodgkin's disease, we are treading on dangerous ground. For we must either accept the proposition that this man had two different lesions existing concurrently, both of which were treated at the same time by X-ray and both of which showed response to this therapy, or we must throw out all the information relative to the Hodgkin's disease, assume the man had a brain tumor, and that this tumor was pretty well held in check by roentgen therapy for a period of six years. This line of reasoning seems a little far-fetched. Consider for a moment that this may have been a brain tumor. There is not a great deal of information to help us localize

an intracranial lesion, but it would have to be in a relatively silent area of the brain and probably in the temporal lobe, possibly on the right side. Some of the staring spells and periods of temporary amnesia suggest a temporal lobe lesion. If the lesion were located in the temporal lobe it would most likely have been a glioma and it is conceivable that the two courses of X-ray therapy held the disease in check for six years. In fact, enough in check that this man was able to pursue a gainful occupation up until a day or so before his death. A cystic degeneration of a rather large temporal lobe lesion may possibly have precipitated the final episode. I hope I am not discarding the true diagnosis, but I do not believe this man had a primary brain tumor. Furthermore, I am going to apply this line of reasoning to any of the other pathological conditions that might exist as primary intracranial pathology, and discard them also.

For a moment or two it might be well to recount some of the neurological manifestations. It is of interest that the first symptoms suggested the development of intracranial pressure, the nausea and vomiting, the progressive stupor, the choked discs and the diplopia. Yet after the first X-ray treatment increased intracranial pressure was no longer a factor, even until the time of death, and the various types of epileptic manifestations became the prominent factors. Even these did not fit a uniform pattern. Apparently the first seizures began in the left hand and spread into generalized convulsions. Later he developed spells of staring into space followed by temporary periods of amnesia and failure of recollection of these attacks. At one time he had a partial, temporary paralysis of his right lower facial muscles, and still later he began to notice dancing lights preceding the convulsive states. The final episode was that of death in status epilepticus.

Going back now to Hodgkin's disease. Following the initial description of the condition, no further mention is made of the recurrence or presence of this disease and we must assume that if it were not the cause of death, it had been arrested by the X-ray therapy to a point where it was no longer clinically obvious. I think we can assume that the disease was under clinical control from the treatments, both in the chest and neck and very likely in the C. N. S. as well. Where do we go from here then to account

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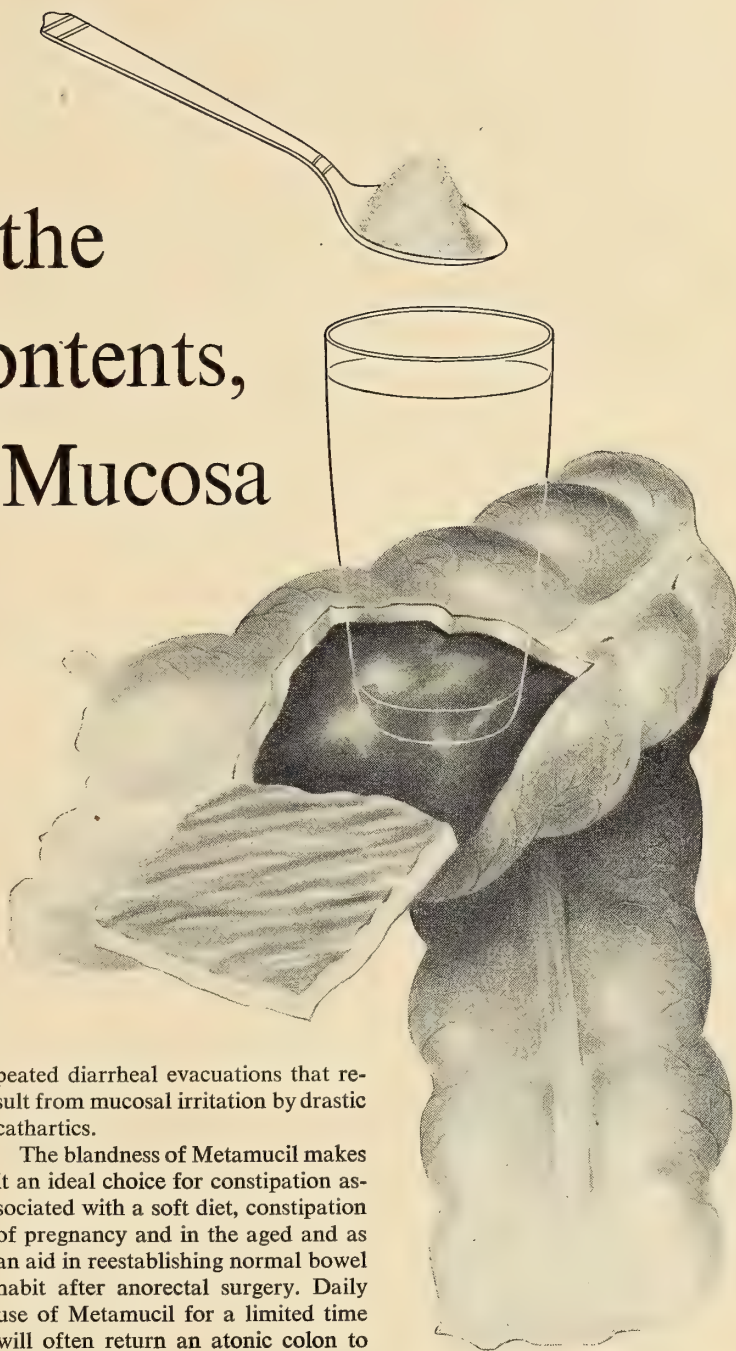
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**SEARLE**

for this man's epilepsy and the terminal episode?

At this point I would certainly like to know just how much irradiation this patient's brain was subjected to, and what the portal of entries were. X-ray therapy is capable of producing scarring and destruction of brain tissue as well as other tissues of the body. The development of brain damage following X-ray therapy is a known fact, as in the development of epilepsy. Here then is a patient known to have Hodgkin's disease in the chest and neck and probably also in the brain. On two occasions he has irradiation therapy to the head, the extent of which we do not know. We do know that his symptoms changed after the first treatment. Formerly he had symptoms of an expanding lesion and increasingly intracranial pressure. Two years after his first treatment he has his first seizure and from then on he is never free from them until he dies. Furthermore, these seizures do not suggest one isolated lesion or area of scarring, but more of a diffuse involvement. Why he suffered from such a violent episode as to cause death is a mystery, but then why status epilepticus develops in some patients is not clearly known. All in all, I think I am willing to accept that this man originally had Hodgkin's disease, but died from the aftermath of the treatment of this condition, the X-ray therapy.

CLINICAL DISCUSSION

Dr. Denny-Brown: In April 1945, while in Germany with the army, the patient developed slowly progressing stupor, with headaches, nausea, vomiting and diplopia. It is assumed that this patient had increasing intracranial pressure. The further assumption seems to have been made that since there was a lymphadenopathy reported to be Hodgkin's paraganuloma and cerebral Hodgkin's disease. But several questions arise immediately, first whether brain tumor caused the increased intracranial pressure. Though the patient had increased intracranial pressure and damage to one or more cranial nerves, it will be noted that there was no sign relating to damage of the brain itself. The way in which Hodgkin's disease ordinarily affects the nervous system is by extension to the extradural spaces. In that manner compression of the spinal cord is commonly caused and occasionally extradural deposits in the skull damage cranial nerves. We therefore suspect that the diplopia was arising from some cranial extradural deposit rather than from cerebral metastasis. But

what of the headache, nausea and vomiting? If the extradural deposit was large enough, it would displace the intracranial contents, or it could occlude one or more venous sinuses. But another difficulty is that we are told the biopsy showed paraganuloma, and this, being the most benign form of Hodgkin's disease, doubtfully if ever affects the central nervous system at all, according to Jackson and Parker and Sparling, Adams and Parker. If Hodgkin's disease does affect the nervous system, it is by the extradural extensions of either Hodgkin's granuloma or Hodgkin's sarcoma. There are cases on record of primary Hodgkin's sarcoma of the brain, but they are found primarily in the cerebellum, curiously enough without evidence of lymphadenopathy. There are reports of reticulum cell sarcoma occurring primarily in the temporal lobe, but in these cases there was also no lymphadenopathy. Since there was a presumed mediastinal mass with affection of lymph nodes, we must conclude that Hodgkin's granuloma was the probable pathology and that an extradural deposit in the skull was the cause of the cranial symptoms. The only explanation of the biopsy report is that the gland section by chance showed a more benign appearance leading to diagnosis of paraganuloma.

Except for occasional severe headaches, the patient got along well until February 1947 when he had a seizure. This began in the left hand and progressed to involve all extremities. The frequent recurrence of such seizures led to his being given a further course of radiation to the head in August 1947. During the radiation treatments he developed a partial paralysis of his right lower facial muscles, possibly due to swelling of the parotid gland, since this cleared after a few weeks. His seizures persisted, however, and now developed features which clearly pointed to a temporal lobe focus. He developed six to eight attacks a day, staring followed by confusion.

The attacks began in the left hand, and the staring followed by confusion was the "dreamy state" of temporal lobe epilepsy. Such an attack may be preceded by an abnormal odor or it may be associated with visual hallucinations, but the absence of these does not lessen the significance of the "dreamy state" which is a temporal lobe attack. The visual aura appeared later in 1949, and was of the poorly organized type associated with posteriorly placed lesions.

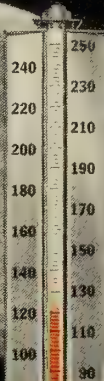
That the patient was given Tridione indicates that the seizures were considered to be petit mal. Whatever his electroencephalographic findings may have been, the most important differentiation in relation to all epilepsy is that between focal epilepsy and general epilepsy, an attack beginning locally or beginning generally. A focal onset means a focal pathology. If a patient stares into space, ceasing all activity for a number of minutes, he is not suffering from petit mal. It seems quite obvious that this patient was suffering from focal epilepsy. I doubt whether the seizures were related to recurrence of cranial tumor. There is no further mention of headache, nausea, vomiting or diplopia.

In April 1950, he had a much more severe attack than usual in the course of an upper respiratory infection. He was admitted to the Boston City Hospital, and I remember seeing him at that time. We could find at that time no evidence of damage to the brain except focal right temporal lobe epilepsy and a few lymphocytes in the spinal fluid. It was suggested that scarring of the temporal lobe was the cause of the attacks. This impression was confirmed by a pneumoencephalogram which showed a dilated lateral ventricle on the right side. We could find no evidence of lymphadenopathy in chest, neck or elsewhere. This will explain why he was treated conservatively with phenobarbital. He did not require as much treatment as had previously been given. He got along quite well and was doing some work with occasional mild attacks until the last illness which brought him into the hospital on March 13, 1951, a little over a year later. He was then brought into the hospital in a series of convulsions, preceded by malaise and fever for one day.

Recovery of consciousness did not occur and we may call the condition status epilepticus. This is an arbitrary definition. Status epilepticus is in fact only an extreme form of periodic grouped seizures and may in fact begin with a series of attacks with recovery of consciousness between attacks. More usually a sudden onset of perhaps 20 attacks the first day is followed by 40 or more the second day and then 60 a day for several days, then a diminishing frequency in similar steps in sequence of 60, 40, 20, 0. It may be seen in the same patient on another occasion as one attack one day, three the next, five the next, three the next, two, then one. In the second occasion consciousness

may be retained in the intervals. It is important to recognize that epilepsy which occurs in periodic bursts of attacks may take the form of "status epilepticus." The important feature is increasing frequency to a peak which is followed by a natural decline in frequency until the next episode. The interval between episodes may be months or years; in some patients there are only one or two in a lifetime. This patient then, I would say, was suffering from status epilepticus. The attacks were generalized whereas they had been focal before, but in status epilepticus generalization is the rule in spite of focal cause. In addition there was a fever, which is a regular feature of status epilepticus known since its description by Bourneville. That one pupil was dilated was probably only an indication of asymmetrical exhaustion of the brain. The attacks responded to intravenous medication, and as soon as the attacks began again the physicians used a further large dose of intravenous barbiturate. This unfortunately is a common practice. The aim seems to be to suppress the attacks at all costs. Analysis of a number of cases of status epilepticus by Robertson and myself some years ago showed that whatever the intensity of treatment it reaches a peak frequency and then declines. The peak frequency of the episode is delayed by heavy sedation, but status epilepticus has a tremendous momentum and requires very high doses of sedatives to cause even a temporary halt. In the treatment of status epilepticus we should not be afraid of the recurrence of the attacks provided they are not such as to progressively embarrass the patient's circulation and respiration. The epilepsy should be allowed to continue in mild degree until its crisis is passed. To try to keep convulsions entirely suppressed only leads to overdosage of therapy. It appears to me that something of that sort happened here. Shortly after this, his respirations ceased, heart sounds became slow, faint and irregular, and he expired within a short time after admission to the hospital.

We are no doubt expected to implicate a recurrence of Hodgkin's disease in this terminal event. But how could a tumor, after this long interval of freedom, suddenly in the course of a few hours cause all this disturbance, unless by causing a subarachnoid hemorrhage or by causing an acute hydrocephalus? In either case the symptoms would not be these. This picture



1. Moser, M.: New York State J. Med. **55**:1999 (July 15) 1955. 2. Agrest, A., and Hoobler, S.W.: J.A.M.A. **157**:999 (March 19) 1955. 3. Smirk, F.H.: Am. J. Med. **17**:839 (Dec.) 1954. 4. Smirk, F.H., and McQueen, E.G.: J. Chron. Dis. **1**:516 (May) 1955. 5. Waldman, S., and Pelner, L.: Am. J. M. Sc. **231**:140 (Feb.) 1956.

Philadelphia 1, Pa.

to me is the onset of status epilepticus in a patient who had already an epileptic tendency. But the epilepsy necessitates a residual scar. How could such a scar arise from a cranial lesion? When I saw this man in 1950 I was impressed by the fact that he had very little hair left on the right side of his head. He had evidently had extremely intense X-ray therapy, directed almost entirely to the right temporal region as judged by the depilation. Therefore I think it likely that the temporal lobe epilepsy and status epilepticus were the result of the intense X-ray therapy and not the Hodgkin's disease. If this was an extracerebral deposit of Hodgkin's disease in the beginning, it would have been situated at the base of the skull, and terminal residual scarring there would be unlikely to be an epileptic focus. Status epilepticus is an illness with extremely high mortality, but I would also feel that 8¾ gr. of intravenous barbiturate must be blamed in part for the final outcome. I would conclude that the condition was status epilepticus from temporal lobe damage following irradiation, complicated by barbiturate intoxication, with a history of Hodgkin's granuloma, probably with extracranial deposits now no longer present.

PATHOLOGICAL DISCUSSION

Dr. Foley: Postmortem examination was restricted to the head. The dura and the venous sinuses were normal. Dr. Raymond Adams cut the brain after it had been fixed in formalin. The only abnormality on the surface of the brain was a small (0.5 cm.) depressed, orange-colored scar in the second temporal convolution of the right hemisphere, near the junction of the temporal and occipital lobes. There was a small defect in the arachnoid over this scar. The surfaces of the hemispheres were not flattened and there were no temporal or cerebellar herniations. On coronal section, the body of the right caudate nucleus was reduced in bulk and was orange-brown in color. The cortex was destroyed near the scar and the white matter of the adjacent convolutions and the centrum of the right temporal lobe was reduced in bulk and varied from gray to light brown in color. The right internal capsule was thin. Both lateral ventricles were slightly dilated, the right more than the left and the right temporal and occipital horns were more dilated than any other part of the ventricular system. Minute foci of

brownish discoloration were seen in the left globus pallidus and convolutional white matter of the left inferior parietal lobule.

On microscopic examination, the scar seen on the surface and on section consisted of complete replacement of the gyrus by dense gliosis and fibrosis. The rest of the temporal region seen to be affected in the gross showed no change in general architectural pattern. The most striking change was an almost complete loss of myelin sheaths and nerve fibers of the convolutional white matter, with diffuse gliosis. Some nerve cells were lost in the cortex overlying these areas, especially in the deeper layers, and there was some replacement gliosis and liquefaction. There was a diffuse but incomplete loss of nerve fibers with gliosis in the white matter of the centrum of the temporal lobe and in the internal capsule.

Small foci of necrosis with hemosiderin in the walls of nearby vessels were seen in the globus pallidus. The smaller nerve cells of the caudate were not present, and only a few large nerve cells remained. Replacement gliosis was intense. Hemosiderin in phagocytes was present around many of the blood vessels. The putamen was unaffected.

Mineralized nerve cells were found both in the caudate and at the edges of the zone of necrosis in the temporal cortex.

There were no significant changes in any of the blood vessels.

No evidence of tumor was found in any of the sections of brain or meninges.

The pathologic findings in this case are consistent with the diagnosis of radiation necrosis of the brain. It is remotely possible that the area of complete focal necrosis in the second temporal convolution was the site of radiosensitive tumor, but the incomplete affection of such a widespread area of brain without loss of architectural pattern makes it most unlikely that the entire area or any part of it was involved by tumor. In the light of the pathologic data, it seems more likely that the original intracranial disorder was due to radiosensitive lymphomatous tumor of the meninges. A delayed radiation necrosis of the right hemisphere, with maximum involvement of the temporal lobe and formation of meningoepirebral scarring resulted in seizures. Under this interpretation, the additional radiation given for the seizures was ill-advised and probably increased the

original extent and degree of damage in the right hemisphere. Death was due to the seizures and their complications.

In reconstructing this case, we might consider briefly certain facts about the behavior of lymphoma in the brain and its coverings. Hodgkin's granuloma may involve the meninges but does not metastasize to brain substance. Hodgkin's sarcoma may involve brain substance. Yet of all the types the sarcoma is the least radio-sensitive, and for this reason it is unlikely that there was a tumor in brain substance in the present case. One must, therefore, return to the probability of a meningeal Hodgkin's granuloma destroyed by radiation, but with resulting damage to brain substance by the radiation.

This case has many resemblances to those described by Pennybacker and Russell, who reported nine cases "in which harmful effects to the brain have followed standard dosages and technique without serious superficial damage, and at long intervals after the termination of treatment. . . . In brief, the lesion was an extensive subcortical necrosis, maximal in the field which received the most radiation. In some cases the clinical effects came on after a long latent interval with the suddenness of a vascular accident; in others they were slowly progressive, clinically suggesting a recurrence of the tumor for which the radiation treatment had been given."

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CONTRIBUTORS

The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
 2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
 3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
 4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
 5. Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.
 6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.
 7. Exclusive Publication—Articles are accepted for publication on condition that they are contributed solely to this Journal. Ordinarily contributors will be notified within 60 days if a manuscript is accepted for publication. Every effort will be made to return unused manuscripts.
 8. Illustrations — Ordinarily publication of 2 or 3 illustrations accompanying an article will be paid for by Arizona Medicine. Any number beyond this will have to be paid for by the author.
 9. Reprints — Reprints must be paid for by the author at established standard rates.
- The Editor is always ready, willing, and happy to help in any way possible.

EDITORIAL

RECENTLY Civil Defense activities in this state have considered Phoenix and Tucson as prime targets and attempted to carry out "dry runs" to see the effectiveness of handling the problems in these areas. The results were not only disastrous as far as the bombing was concerned but the organization to date is totally inadequate. It is inadequate not because of the men who are attempting to promote Civil Defense but from the lack of cooperation that the members of the medical societies and public in general have afforded to these individuals.

There is no question that these two cities are prime targets, their preparations have been inadequate, the cooperation offered the Civil Defense officials has been minimal and yet we are dealing with a very real danger.

You are quite willing to buy various insurance policies on other matters. There is no question that the purchase of the CD insurance policy of a planned organization is a must in this mid-twentieth century. Further, a planned evacuation of these two communities is a necessity and not an impossibility. Phoenix has the potential to carry this out. Tucson is the only city with a Strategic Air Command Base that does not have an alarm system available to permit its populace at least a chance.

One cannot recommend prolonged training programs but one can recommend that we establish a program and plan that all can follow and have available a trigger mechanism as an alarm system to permit evacuation.

* * *

THE May 31st issue of the New England Journal of Medicine contains an editorial discussing the stand of the ethical committee of the British Medical Association with reference to any physician taking part in either radio or television broadcasting. They have insisted that the medical doctor involved remain anonymous as part of his contract to carry on the broadcast. I am sure this approach must have pre-

elicited considerable adverse comment from both members of the medical profession and of the lay public for the attitude of the medical man with reference to medical ethics leaves many factors to be understood by the public in general. However, this approach does not seem unreasonable for local and national newspapers have printed medical articles for many years without identification of the author. It is quite obvious that a man might easily appear as a leading specialist in a field and unjustifiably obtain professional advantage over a colleague when acknowledgement in his field should be by the informed members of the medical profession and not by the uninformed public. His standard of practice should be established by his publications, his mode of practice, his contribution to medical discussions and certainly not the ability to perform well on the television screen or in front of a microphone.

This approach presented to us by our British colleagues seems definitely worthy of consideration and should be kept in mind with additional broadcasts on radio and television stations.

* * *

It is inevitable in a new and young state, and I am sure that it exists in the older states, that various groups are accused of running the local and state medical organizations. This dominance by a group is fundamentally a dominance by default rather than through intrigue as inferred. An effort will be made by this Editorial Staff to see that the members of the Arizona Medical Association are informed of the various developments within their Society and as to legislation which may effect them. However, it will depend upon the individuals in the various areas to take an active part in their organization and attempt to bring about the best possible organization, and not complain that a few limited individuals from one sector dominate the entire group.

MEDICAL ETHICS OF THE AMERICAN MEDICAL ASSN.

IT IS of interest to all practicing physicians that the present principles of medical ethics of the American Medical Association, which have served as a guide for physicians for more than a century, are undergoing an extensive

revision. This action was initiated by the House of Delegates at the recent Chicago meeting and in a recent secretary's letter the following information is contained:

"Every basic principle," the Council report said, "has been preserved. On the other hand, as much as possible of the prolixity and ambiguity which in the past obstructed ready explanation, practical codification and particular selection of basic concepts, has been eliminated."

The previous forty-eight sections have been reduced to ten.

These principles are intended to serve physicians individually or collectively, as a guide to ethical conduct. They are not laws; rather, they are standards by which a physician may determine the propriety of his own conduct. They are intended to aid physicians, in the relationships with patients, with colleagues, with members of allied professions and with the public, to maintain under God, as they have through the ages, the highest moral standards.

The ten proposed sections, representing the essence of brevity, follow:

1. The prime objective of the medical profession is to render service to humanity with full respect for both the dignity of man and the rights of patients. Physicians must merit the confidence of those entrusted to their care, rendering to each a full measure of service and devotion.

2. Physicians should strive to improve medical knowledge and skill, and should make available the benefits of their professional attainments.

3. A physician should not base his practice on an exclusive dogma or a sectarian system, nor should he associate voluntarily with those who indulge in such practices.

4. The medical profession must be safeguarded against members deficient in moral character and professional incompetence. Physicians should observe all laws, uphold the dignity and honor of the profession and accept its self-imposed disciplines. They should expose, without hesitation, illegal or unethical conduct of fellow members of the profession.

5. Except in emergencies, a physician may

choose whom he will serve. Having undertaken the care of a patient, the physician may not neglect him. Unless he has been discharged, he may discontinue his services only after having given adequate notice. He should not solicit patients.

6. A physician should not dispose of his services under terms or conditions which will interfere with or impair the free and complete exercise of his independent medical judgment and skill or cause deterioration of the quality of medical care.

7. In the practice of medicine a physician should limit the source of his professional income to medical services actually rendered by him to his patient.

8. A physician should seek consultation in doubtful or difficult cases, upon request or when it appears that the quality of medical service may be enhanced thereby.

9. Confidences entrusted to physicians or deficiencies observed in the disposition or character of patients, during the course of medical attendance, should not be revealed except as required by law or unless it becomes necessary in order to protect the health and welfare of the individual or the community.

10. The responsibilities of the physician extend not only to the individual but also to society and demand his cooperation and participation in activities which have as their objective the improvement of the health and welfare of the individual and the community.

STAFF VACANCIES

STUDENT HEALTH SERVICE STATE COLLEGE OF WASHINGTON

Pullman, Washington

POSITION of Physician for the Student Health Service at the State College of Washington is vacant as of September 15, and we are seeking qualified applicants. Beginning salary on a 9-month basis is \$8000, or \$9500 for 11 months (slight increase for exceptional experience or training). The physicians filling these positions should be licensed in the State of Washington. The basic science examination is administered in July and January of each year. Reciprocity exists with Alaska, Arizona,

Arkansas, Colorado, Minnesota, Nevada, Oregon, South Dakota, Texas and Wisconsin, and partially with some other states.

The Student Health Service personnel consist of two full-time clinic nurses, receptionist, and three physicians, one the Director, and a fourth-time psychiatrist. The Student Health Service clinic is located on the main floor of the Memorial Hospital which is situated on the college campus. This serves the college students and residents of Pullman. Student Health Service physicians are responsible only for the care of college students. Emergency surgical procedures are performed by staff physicians as are certain other surgical cases. Students requiring specialized care beyond the scope of local physicians are referred to specialists in Spokane or otherwise taken care of by the family.

Clinic hours are 9:00-12:00 a.m. and 1:00-5:00 p.m. on weekdays, and Saturday, a.m. Emergencies after hours, weekends and holidays are handled by Student Health Service physicians "on call."

The State College of Washington has an enrollment of approximately 5,500 students — the majority of whom live in college dormitories and Greek social living groups. There are excellent schools of Veterinary Medicine and Pharmacy, as well as other scientific fields, represented at the State College of Washington. The college library has a sizeable collection of medical books and subscribes to numerous journals. This institution is a member of the Pacific Coast Conference and has a full and well-rounded athletic program.

Pullman is 78 miles south of Spokane, Washington, and has a population of approximately 12,500. Cultural activities of the entire area are centered in the college through the many and varied programs offered in Humanities, including music, art, literature and drama. Faculty members and their families have an unusual opportunity for participation in cultural enterprises of the institution. The public school system is excellent and churches of most denominations are active. Apartments and houses are usually available through the College Housing Office.

Address inquiries to: H. B. Zion, M.D., Director of Student Health, State College of Washington, Pullman, Washington.



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TOPICS OF *Current Medical* INTEREST

RX., DX., AND DRS.

By Guillermo Osler, M.D.

IT WAS promised that we would tell more about the **medical newsmagazine 'M.D.'** in this month's column. We'll have to take the promise back, which shouldn't break many hearts, but the reason is an odd one. The editor of the potential journal has asked that no review of the 'preview issue' be made, even tho we liked it (which we did). "The newsmagazine does not as yet exist." . . . So we didn't write a word and you didn't read it.

The latest **COMBINATION OF DRUGS** has been highly predictable. Acetylsalicylic acid, plus prednisolone, equals 'Cordex' (Upjohn). It is logical for the drug companies to use 'shotgun' preparations, and maybe they will add an antacid or, in the Geigy Co., Butazolidine. . . . Incidentally the last-named is now advertised as **NOT** being steroid-like in its actions, whereas the original effects were vaguely confused with the corticosteroids.

Now we have both sides of the question about a **medical school** for Arizona. Dr. Norman Ross produced a rousing article in favor of it in the July issue. . . . Dr. D. W. Melick carefully analyzed the situation a year or so ago with a contrary conclusion.

The staffs of hospitals, and even TV audiences, have gotten used to **ANESTHESIA MACHINES**. They regulate and mix the flow of gases, take pressures, probably contain Coca Cola, etc. . . . The new 'Antoxnestheton,' however, is astounding to almost everyone outside of the Presbyterian Hospital in New York, tho they may have similar ones in a few other places. It controls the use of oxygen and nitrous oxide; samples the expiratory breath; analyzes it for carbon dioxide; and makes automatic changes to regulate the CO₂ content. . . . The 'attendant' is probably necessary, but he might sneak a comic book now and then.

If you were to see a dignified little booklet entitled "1956 Report of the Scientific Director," with Dr. Clarence Cook Little as Chairman of the Scientific Advisory Board you might properly wonder what it was about. . . . If you found that the Board included Cattel of Cornell, Comroe of U. of Penn., Kotin of U.S.C., Reimann of Philadelphia, Rienhoff of Hopkins, and others, you would be even more impressed, tho uncertain. . . . If you found a list of 53 leading medical educators and research workers who were

applying themselves to the study of tobacco, smoke, and smoking it would be clear that the **Tobacco Industry Research Committee** was fighting back, and in a most organized (and probably expensive way). Very few results of the projects so far. It is hard to see how they could get lost if unfavorable.

More medical journals are placing a **brief SUMMARY** of the results of their articles **AT THE START** of the article. 'Modern Medicine' has joined the group. . . . This saves time for the person who scans in a hurry. It saves turning to the end of the article, a habit which physicians have long shared with women readers of mystery stories and novels.

This item is of practical interest only if the ocean comes inland again. Capt. Shaw of the Medical Corps has given an analysis of the physiology of 'WATER SUFFOCATION.' There are notable differences between fresh and salt water. . . . Drowning in fresh water results in profound hemodilution, low sodium values, and such high potassium levels that a fixed ventricular fibrillation may occur. Seventy per cent of the circulating blood may be inhaled fresh water in three minutes. . . . Inhaled salt water produces an immediate hemoconcentration. Sodium goes very high, but the K/Na ratio stays normal. The heart may beat for 6 or 7 minutes. . . . Plasma proteins diffuse into the alveolar bed in both instances, and pulmonary edema may need treatment with diuretics, heart support, and IPP breathing.

PILLS AND PUNS DEPARTMENT. — The publication of the pharmacy school at the University of Southern California is called "PHARM/SC."

Dr. Andrew Ivy of Chicago is a man of many words, not all of them controlled by his sponsors. He was somewhat 'detached' for his support of Krebiozen, a preparation aimed at cancer. . . . His most recent newsworthy comment relegates another large segment of our profession to the limbo, — "Surgery will someday become unnecessary. The only cause of death will be eugeria, or the normal aging process. Surgeons do many fine things for patients, but they wouldn't be necessary if the patients had done something for themselves earlier." . . . I wonder how surgeons will do as gerontologists? Or has Dr. Ivy forgotten accidents, fires, infections, etc., which are not prevented by moderation in diet?



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Medical & Dental Finance Bureau begins its 21st year of service to Arizona doctors and their patients . . . years that have included a depression, two wars, and good times.

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For information on M & D's Budget Plan for Health contact Mr. Gray in Phoenix, ALpine 8-7758. In Tucson, Mr. O'Rourke, MAin 3-9421.

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Incidentally Drs. Ivy, Pick, and Phillips have just publicized a 'Condensation of Observations on KREBIOZEN in the Management of Cancer.' . . . They conclude that it possesses palliative potency in the management or treatment of 68% of patients with several different types of cancer. It possesses 'oncolysis' in 50% of patients. . . . These are definite but fairly mild statements.

The Thorazine people (Smith, Kline, and French) have mentioned the "three phases in the adoption of a new drug, — 1. After a wary skepticism it is carried on a wave of enthusiasm to acceptance. 2. Reports and rumors of its limitations and side reactions. 3. Stabilization at its real level of value. . . . This is the course of a good drug. We have often urged here 'Wait and see,' and 'Every substance has its evil face.'

The FAMILY PHYSICIAN has been loaded with responsibilities from two different areas. . . . Dr. Arnold Friedman of Columbia, director of the Montefiore Hospital Headache Clinic, says that psychotherapy is the best treatment for migraine and tension headaches, and that the family M.D. is the one to give it. "Supportive help" and "reassurance" are needed, and he can do it best. . . . Dr. F. J. Braceland of Hartford, Conn., says that if the family doctor (never 'Doc' if he is to be a psychiatrist!) re-examines his practice he will find that chronic, intermittently disabling illnesses are often emotional disorders, psychosomatic ills, or geriatric problems. He must remember that emotional disorders may be superimposed on physical illness; they may complicate it; or they may arise independently. The differential diagnosis of functional versus organic disease is in the hands of the physician, and he must then be in charge of explaining it.

Remember the early days of the Lempert fenestration operation for otosclerosis? It could only be done by its originator; he could only do a certain number of these delicate and time-consuming procedures; and there were no financial allowances for failures, re-operations, or for professional courtesy. . . . A replacement of the operation has been described. The stapes is mobilized, again with great delicacy and magnification. . . . It is a peculiar coincidence that we knew of a doctor's wife from New Orleans who had the Lempert op. in 1935; the cost was \$1,250; the deafness recurred; the current report on a new maneuver is by a Dr. Normann of New Orleans.

A favorite topic in this column has been the 'DESALTING' OF SEA WATER. It has been a wonderful field for inventors, investors, dreamers, crack-pots, and wise men in half a dozen nations. . . . Look who's in it now, tho! The

Saline Water Office of the Interior Department was authorized in 1952 by Congress. It is hoping to complete two experimental models this year, using compression distillation in one and solar distillation for the other. . . . The six different approaches which have been tried are solar, electric membrane, osmotic, freezing, solvent extraction, and ultrasonic vibration. As can be imagined only the govment could afford the cost of the attempts.

POEM

Frightened patients when they want a cure,
Bid any price and any pain endure;
But when the Doctor's remedies appear
The cure's too easy and the price too dear.
— Daniel Defoe in "The True-Born Englishman" (1701)

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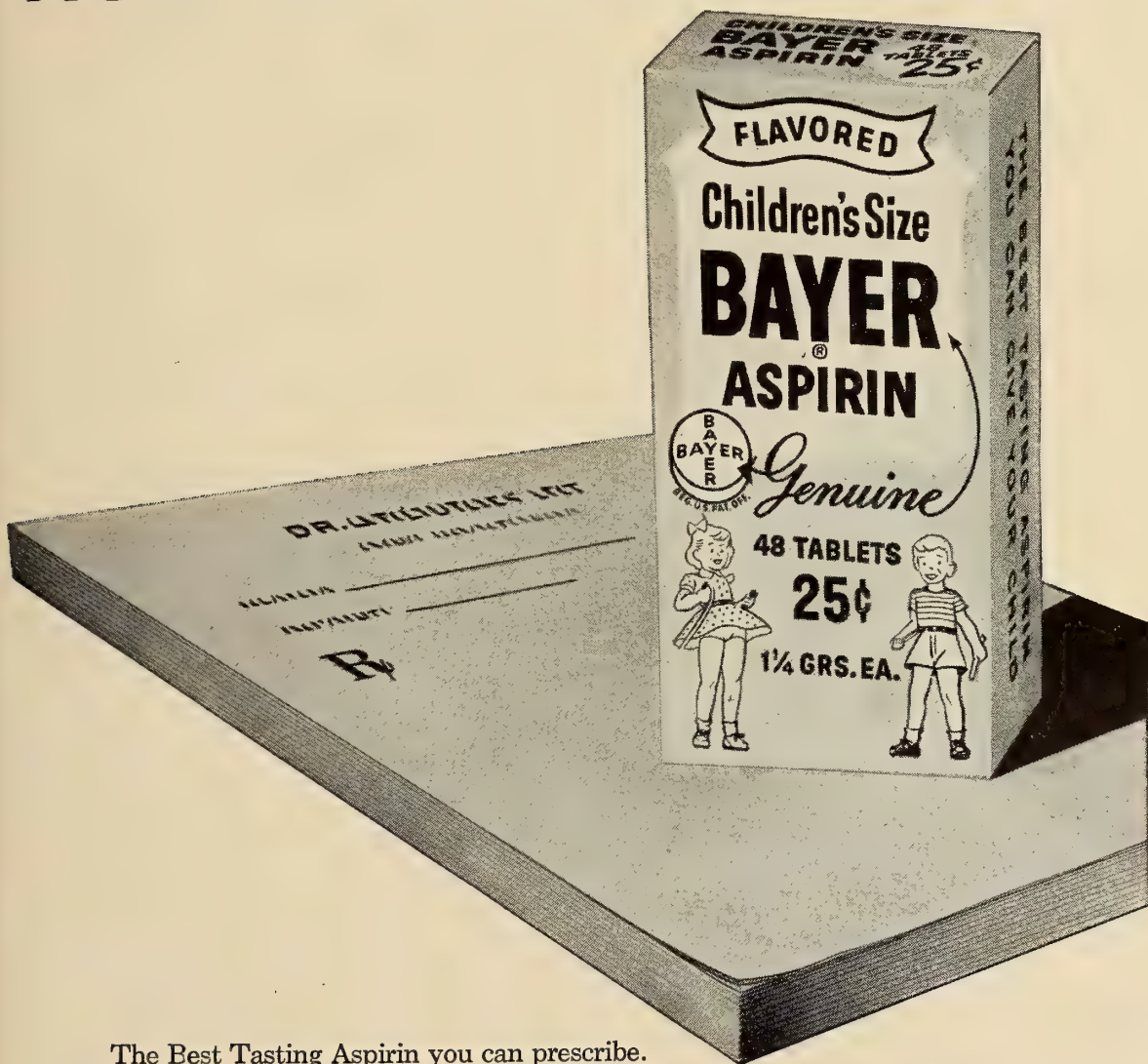
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Organization PAGE

CIVICS — Norman Ross, M.D.

A DENTAL COLLEGE FOR ARIZONA

A letter to R. K. Trueblood, D.D.S., F.A.C.D., posing the question, "When?" brought forth the reply that he would request an answer from the Board of Trustees of the Arizona State Dental Association to my question.

Dr. Trueblood's own comment was "Dental Colleges now in existence and those in the process of building are having a tough time hiring and keeping faculties. Many methods have been and are being tried by the colleges to obtain and keep their faculties. The shortage of trained dental teachers is acute. When one college gets a good teacher trained, another will offer him a better salary. And so it goes."****

It would appear from the above that if our facilities, and dentistry in particular, are to be staffed that there must be a change in educational programs. We propose a return to the old method which was that of physicians and dentists in the community, possessing proper academic qualifications, adding to their private duties teaching assignments in those colleges. This poses a radical change in the present health educator's concept — a change at national level.

ARIZONA COLLEGE OF MEDICINE:

"Medical News," Volume 2, No. 15, July 30, 1956, the column "from WASHINGTON:" "WASHINGTON — Look for a major Congressional investigation this fall of complaints that there is a shortage of physicians."

PRESIDENT EISENHOWER SIGNS

OMNIBUS HEALTH BILL

More money for Public Health Educator training — and public health.

Arizona's college and universities need approved schools of nursing as well as programs in other health fields to qualify our local students for these benefits.

* * *

ARIZONA ASSOCIATION OF NURSING

HOMES, Post Office Box 5122, Phoenix, Arizona, Charles Schmid, President.

A complimentary letter from Mr. Schmidt

advises, however, that there is and was no reorganization of the Arizona Association of Nursing Homes as stated in the June issue, but that the writer had been contacted by a group who broke off from their parent organization in February of 1956. Mr. Schmid states that this group recently formed an association adopting a name different only in that the name "Registered" is inserted. He recommends that in his opinion the division is only temporary and that the parent organization anticipates a return "to our membership rolls." President Schmid advises that his organization is nationally recognized and affiliated nationally.

* * *

THE SALVATION ARMY,

Post Office Box 1952, Phoenix, Arizona.

A DIGEST

of reports concerning the Third National Conference on Solicitations — held at Cleveland, Ohio, March 21-23, 1956.

The need for controls in fund-raising, FOURTH IN THE LIST OF THIS COUNTRY'S BIG BUSINESSES, was discussed.**** A suggestion that all health agencies should be merged in the National Health Institute with support from increased federal taxation was not received favorably by most conference delegates.

The Salvation Army observers were struck by the realistic approach to these enormous problems on the part of the representatives of corporations, management, labor, Chambers of Commerce, Better Business Bureaus, welfare agencies and the giving public — and that never once was there any indication that they were ready to forfeit their right to voluntary philanthropy and turn the whole complicated problem over to a department of government.

A new angle introduced in this Conference was a presentation of the urgent need for, and recent upsurge in, corporation support for higher education in this country.

At the conclusion of the Conference it was announced that the W. T. Grant Foundation

of New York City had made a substantial grant to the Conference on Solicitations to conduct a **complete study of solicitation abuses in every area** and to recommend a plan to correct such abuses.

Laws: Indications are that, in time, all states will enact legislation to control fund-raising activities, to protect the legitimate agencies and to eliminate the racketeers. Experience demonstrates the need for carefully phrased laws, with sufficient teeth to make them effective.

Locally: in addition to municipal laws, Chambers of Commerce and Better Business Bureaus are doing an excellent job in many communities to bring home some kind of order out of chaotic fund-raising activities. They serve as a clearing house for information on fund-raising appeals. There was much discussion about proper format of questionnaires to be used locally to elicit the required information from agencies and all groups conducting public appeals — **and about the dangers of libel involvement in giving such information to the public.**

Representatives of three national health agencies and a speaker for the United Fund of Detroit expressed opposing views on the effectiveness of the United Fund plan as a solution to the fund-raising problem.

Brigadier Henry H. Koerner states that in his opinion a serious drawback to the success of the United Fund Organization is the difficulty experienced in assuring the public that their contribution will go to the support of his or her designated agency in the group. Private charity is seldom all inclusive, particularly in people of low incomes who deprive themselves or their families of luxuries, and at times necessities, by their gifts.

The entire text of this report should be read. Copies will be sent on request.

* * *

AMERICAN FOUNDATION FOR THE BLIND, INC., 15 West 16th Street, New York 11, N. Y.

THE EDITOR forwarded a packet from this agency with one item in particular which is worthy of a place in the waiting room, namely, the Annual Report. In that we are frequently criticized for the advanced age of our magazines and periodicals, pamphlets such as the above could be considered as proper reading matter for the reception room. These booklets

are in lay terms, factual, and there is probably no group other than ourselves so well supplied.

The remainder of the press kit included press releases, listing taboos, cliques, misconceptions, as well as editorials and suggestions for articles. We have this great mass of data on file but space soon will dictate the circulation of this material among you members or transfer to some library.

* * *

AMERICAN MEDICAL ASSOCIATION, PUBLIC RELATIONS DEPARTMENT, Chicago 10, Illinois.

Under date of June 1956, attention is called to display racks for health information in waiting rooms of doctors, a program operating at present in Columbus, Ohio, via their Academy of Medicine.

It reports as well the association of medical and legal societies in Montana, Utah, Wisconsin, Virginia, Iowa and North Carolina.

* * *

JOINT BLOOD COUNCIL, INC. 1832 M Street, Northwest, Washington, D. C.

A report in which "pertinent information regarding actions taken by the Board of Directors of Joint Blood Council in Chicago June 15, 1956," is acknowledged.

The Board gave the go-ahead signal for projects concerned with collection and dissemination of information, improvements of relations within the blood-banking field, accreditation, and other administrative problems, and scientific research.

* * *

TOBACCO INDUSTRY RESEARCH COMMITTEE

Paper: Hartnett Cites British Tobacco Tests Failing to Produce Animal Cancer. Will mail out postage paid.

* * *

STATE GOVERNMENT, Published by the Council of State Governments.

ECONOMY IN MENTAL HEALTH

By Albred Paul Bay, M.D., and Paul E. Feldman, M.D.

On the basis of a study of costs at Topeka State Hospital, Kansas, as compared with those at twenty-two other mental hospitals in this part of the country, the authors of this paper contend that expenditures of higher amounts at Topeka for care of each patient saves money in the long run.

AMERICAN CANCER SOCIETY

THE LONG search by Science for the "mechanism of action" of penicillin may have been narrow considerably by findings at the University of Texas Medical Branch.

Dr. Robert C. Barnett here has resolved part of this modern mystery by producing micro-therm normal with another common chemical, scopic monsters with the drug and making

The results of this research were announced today by the American Cancer Society, which supports Dr. Barnett's work.

Penicillin, the oldest antibiotic in regular medical use, has been used for almost 15 years to cure and control many of mankind's commonest diseases. But until now very little has been known about how it works — precisely what it does to the chemistry of the bacteria it kills. The same is true of all other antibiotics.

Dr. Bennett discovered that if he placed sublethal doses of penicillin in cultures of sewage bacteria, the bacteria could multiply but not divide. Under the influence of the drug, a bacterium would divide up to the point where the mother cell became two daughter cells — but the daughters could not pull apart. They were stuck together end to end like Siamese twins.

The Siamese twin daughters in turn could continue to multiply — but neither they nor their progeny could pull apart so long as penicillin permeated their medium.

In this manner, Dr. Barnett has grown enormous strings of bacteria. Sometimes 300 or 400 would be stuck together end to end.

The scientist found that if he added to the cultures a bit of ATP (adenosine triphosphate), the string promptly broke up into normal individual bacteria.

ATP exists in all cells as a carrier of energy-laden phosphate. ATP acts as a battery — storing and transporting energy to cell and body sites where it is needed to weld compounds together or pry them apart. It is produced in cell power houses called mitochondria.

These results indicate that penicillin somehow blocks the production or use of ATP; and in this apparently lies the secret of penicillin's ability to destroy disease-inducing germs. The germs take up the penicillin and are destroyed by it; normal cells reject penicillin or detoxify it.

The Texas scientist now is trying to narrow the search for penicillin's "mechanism of action" even more. He is trying to find the precise point in chemistry where penicillin reacts, in some cases, to prevent bacteria from dividing and in other cases to kill them.

NOTES

1957 Meeting, Arizona State Medical Association, Stardust Hotel, Yuma, Arizona, April 10-13, 1957.

FISKE ESSAY ON INFERTILITY

The Trustees of America's oldest medical essay competition, the Caleb Fiske Prize of the Rhode Island Medical Society, announce as the subject for this year's dissertation "THE PRESENT DAY TREATMENT OF INFERTILITY." The dissertation must be typewritten, double spaced, and should not exceed 10,000 words. A cash prize of \$350 is offered. Essays must be submitted by January 10, 1957.

For complete information regarding the regulations write to the Secretary, Caleb Fiske Fund, Rhode Island Medical Society, 103 Francis Street, Providence 3, Rhode Island.

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*Modell, W.: The Relief of Symptoms, Phil-
adelphia, W. B. Saunders Company, 1955,
pp. 265-266.

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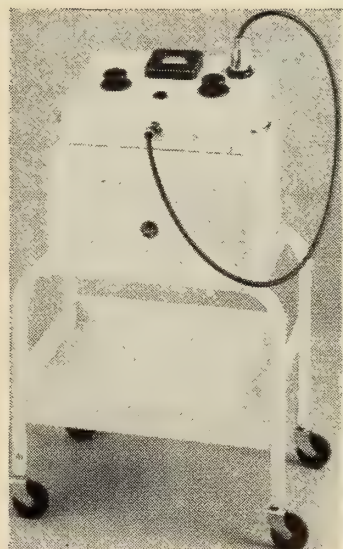
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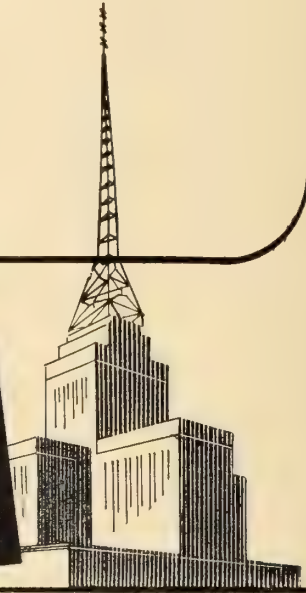




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A WORD FROM THE PRESIDENT



Mrs. Oscar Thoeny

THIS is the beginning of a new year — the 9-month year when our nation's schools are in regular session. Did you ever stop to consider how much of our life is geared to this schedule? Many clubs refer to this as the start of the club year, whether or not they have school connections.

The opening of school doors affects virtually everyone. If you have youngsters in your home, there is an immediate change in the pattern of your days. When you get behind the wheel of your car, you are sure to notice school areas are being guarded by police and by the children themselves, and extra traffic signs are out. In the hours just before and after school there are increased numbers of bicycle riders and large groups of child pedestrians enroute to and from school. In rural areas, youngsters may of necessity be walking in the roadway.

This Fall change-over in the traffic situation focuses attention on one of our major traffic problems: child traffic accidents. A sense of responsibility and dependability grows as we mature. Being adults we must recognize that

the 5 or 10-year old simply can't be expected to be completely reliable in his safety habits. Our added alertness must compensate for children's mistakes. Give them a chance to learn!

Don't be juvenile and try to compete with bike riders: give them a break. Set a good example for your children by your own alertness and precautions in traffic. You urge them to "eat spinach so you'll be big and strong like daddy." Are you sure you want them to copy your daily safety habits as well?

Check with your children's school to be sure your safety lessons are consistent with its teachings. Confusion is costly here.

Teach youngsters to obey all traffic safety rules **at all times**. The habits can be formed before children are old enough to understand the reasons behind them, and it is important that the rules be definite and unvarying.

Films available to us on safety for group use: Chain Reaction (16 MM or 35 MM sound-motion) b & w, 13 mins., humorously narrated by Bob Hope: theme, courtesy makes safe driving. User pays shipping charges. Peter and the Whiffle-hound (16 MM sound-motion) col. 10 mins., film illustrates pedestrian safety for primary school levels. Free loan. User pays shipping charges.

Since we know accidents in auto driving are bound to happen, we should try to prevent injuries. If we keep asking for and insisting on padding on the instrument panel and steering wheels designed to absorb shock, we will get them. When you hit a pole at 30 miles an hour (and who drives this slowly on the open highway?) the force is 180 times your weight when you do not have seat belts and only 15 times your weight with seat belts on.

Other films available at the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill. c/o Alice C. Mills, Director Women's Activities:

"There's Danger in Darkness" and "Driving at Night."

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Arizona Medicine

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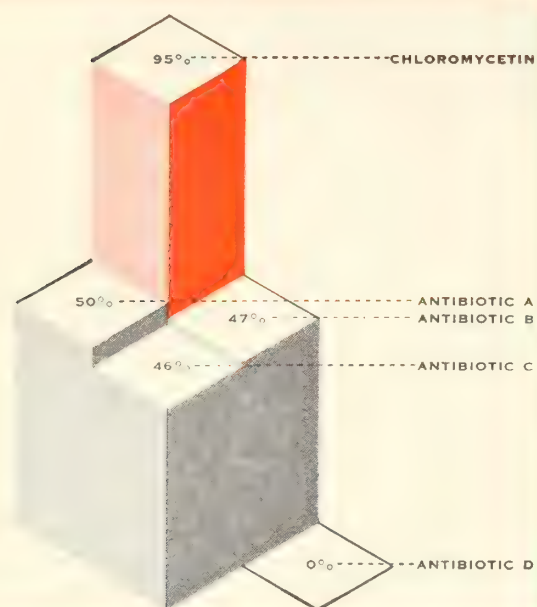
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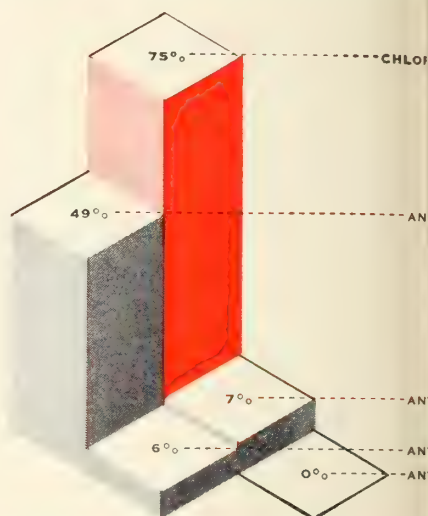
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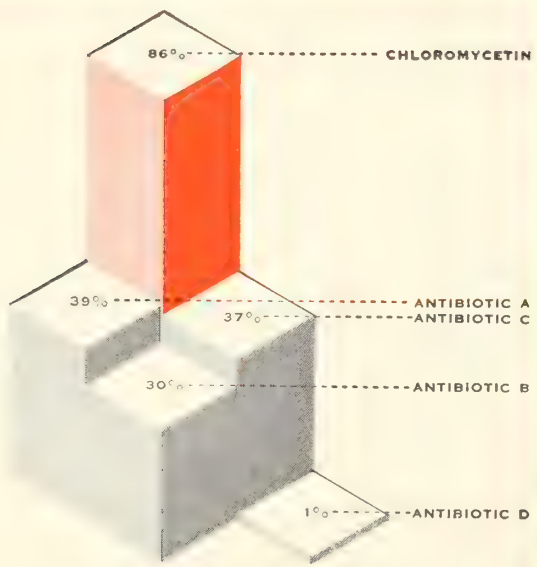


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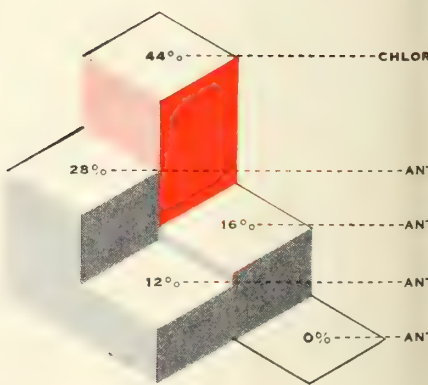


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*This graph, based on *in vitro* data, is adapted from Horton and

ARIZONA MEDICINE

Journal of ARIZONA MEDICAL ASSOCIATION

VOL. 13, NO. 10  OCTOBER, 1956

TABLE OF CONTENTS

| | |
|--------------------------|----|
| OFFICERS DIRECTORY | 6A |
|--------------------------|----|

ORIGINAL ARTICLES

| | |
|---|-----|
| EXPERIENCE WITH A NEW ANTICOAGULANT COUMADIN® (WARFARIN) SODIUM | 389 |
| Daniel H. Goodman, M.D., Phoenix, Arizona | |
| PATHOPHYSIOLOGY AND VASOCONSTRICTIVE THERAPY FOR MENORRHAGIA AND HEMORRHAGE ACCOMPANYING PARTURITION | 393 |
| Drs. W. Marshall, A. W. Kozelka, D. Kuljis; Two Rivers, Wisc., and Dr. Nelson Bonner, Manitowac, Wisc. | |
| RECURRENT PULMONARY DISEASE IN CHILDREN THE SINO-BRONCHIAL SYNDROME | 403 |
| Howard M. Purcell, Jr., M.D., Phoenix, Arizona | |
| MONGOLISM AND ACUTE LEUKEMA | 408 |
| B. P. Storts, M.D., Tucson, Arizona | |

ARIZONA SEMINARS

| | |
|--|-----|
| SOME THOUGHT ON THE TUBERCULOSIS PROBLEM | 410 |
| Hugh H. Smith, M.D., Tucson, Arizona | |

MEDICAL PROBLEMS

| | |
|---------------------------------------|-----|
| PHOENIX CLINICAL CLUB | 422 |
| Palmer Dysart, M.D., Phoenix, Arizona | |

THE PRESIDENT'S PAGE

| | |
|---|-----|
| ANOTHER ELECTION IS NEAR | 436 |
| Abe I. Podolsky, M.D., President, Arizona Medical Association | |

EDITORIAL

| | |
|--------------------------|-----|
| QUALITY - QUANTITY | 437 |
|--------------------------|-----|

THE HISTORY OF MEDICINE

| | |
|--------------------------------|-----|
| NARCISO HEREU MATAS, M.D. | 439 |
| W. V. Whitmore | |

TOPICS OF CURRENT MEDICAL INTEREST

| | |
|--|-----------|
| RX., DX., AND DRS. | 442 |
| Guillermo Osler, M.D. | |
| BLUE CROSS-BLUE SHIELD | 441 & 456 |
| ORGANIZATION PAGE Civics | 448 |
| Norman Ross, M.D. | |
| 1957 ANNUAL MEETING - Henry D. Brainerd, M.D. | 450 |
| SUED FOR SLANDER! | 451 |
| J. D. Hamer, M.D., Phoenix, Arizona | |
| SOCIAL SECURITY - RH 7225 | 451 |
| J. D. Hamer, M.D., Phoenix, Arizona | |
| NOTES FROM DESK OF THE EXECUTIVE SECRETARY | 454 |
| AMERICAN CANCER SOCIETY | 455 |

WOMAN'S AUXILIARY

| | |
|---------------------------------|-----|
| NURSE RECRUITMENT PROGRAM | 457 |
|---------------------------------|-----|

DIRECTORY

| | |
|----------------------------|-----|
| LABORATORIES | 45A |
| DRUGGISTS DIRECTORY | 47A |
| SANATORIUM DIRECTORY | 48A |
| PHYSICIANS DIRECTORY | 50A |

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ARIZONA MEDICINE

Journal of Arizona Medical Association

VOL. 13, NO. 10  OCTOBER, 1956

Original ARTICLES

EXPERIENCE WITH A NEW ANTICOAGULANT COUMADIN® (WARFARIN) SODIUM

By Daniel H. Goodman, M.D.
31 W. Camelback Road
Phoenix, Arizona

THE DISCOVERY and clinical application of anticoagulants has been one of the most noteworthy contributions in medicine in the past decade. Their usefulness is well established. The increasing use of anticoagulants stimulated chemists to search for an anticoagulant which would be both effective and safe for wide employment by specialist and generalist alike. Such an ideal drug would extend the field of usefulness of anticoagulant therapy generally, and would exert a salutary effect on the grave social and economic implications of thromboembolic disorders.(1)

The criteria for an ideal anticoagulant have been formulated.(1)(2) These include (1) oral as well as parenteral effectiveness; (2) rapid onset of action; (3) satisfactory therapeutic index and freedom from untoward side-effects; (4) no cumulative action or toxicity from prolonged use in ambulatory patients; (5) predictable quantitative relation between dose and anticoagulant effect, and uniformity of response from patient to patient; (6) an anticoagulant activity not requiring daily laboratory control; (7) prompt cessation of effect when administration of the drug is stopped, or when an easily administered nontoxic antagonist is given; (8) low cost; (9) ability of an antagonist to titrate excessive hypoprothrombinemia back to the therapeutic range and (10) a capacity of the anticoagulant to reinduce therapeutic hypo-

prothrombinemia after administration of a counteractant.

Coumadin® (Warfarin) Sodium, a new anticoagulant, was developed in the laboratories of Professor Karl Paul Link, of the University of Wisconsin, the discoverer of the first oral anticoagulant, Dicumarol. Coumadin Sodium is a potent hypoprothrombinemia inducing agent. It has the following properties: (1) it is soluble in water, it can be administered orally or intravenously; (2) it has great predictability of response; (3) relatively small doses induce a therapeutic hypoprothrombinemia within 24 hours; (4) it yields a smooth extended curve of hypoprothrombinemia; (5) an initial dose of one mg. per kg. of body weight (usually 75 mgm.) orally or intravenously is usually adequate to induce a therapeutic hypoprothrombinemia; (6) a steady controlled level of therapeutic hypoprothrombinemia can be maintained by a single dose of 25 mgm. (one tablet) every second to fourth day, or by a daily dose of about 5 to 10 mgm.; (7) bleeding is readily counteracted by phytonadione (vitamin K₁). A reinduction of therapeutic hypoprothrombinemia is readily effected by Coumadin and (8) no dermal reaction or blood dyscrasias have been observed with Coumadin.

The indications for anticoagulant therapy are becoming well defined. The remarkable efficacy of anticoagulant therapy in preventing postoperative venous thrombosis, pulmonary embolism and thrombophlebitis are well

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known.(3) In clinical medicine, anticoagulants are indicated in the treatment of pulmonary embolism, thrombophlebitis, phlebothrombosis and in carefully selected instances of cerebrovascular thrombosis or embolism, occlusion of the central retinal vein, mesenteric thrombosis, frost bite, and vascular damage from trauma.

A prime indication for anticoagulant therapy is coronary thrombosis with myocardial infarction. It represents an exceedingly important advance in the management of patients with acute coronary occlusion and myocardial infarction. The cooperative study of the Committee on Anticoagulants of the American Heart Association showed that the use of anticoagulants strikingly improves the survival rates of patients who suffered an acute coronary occlusion with myocardial infarction. Thromboembolic complications were reduced by nearly 75 percent and the death rate was decreased by more than one-third.

These findings on 1036 patients led to the recommendation that all patients with coronary thrombosis and myocardial infarction receive anticoagulant therapy in addition to the conventional forms of treatment, unless a definite contraindication exists. Since it is, at best, extremely difficult if not impossible to differentiate between the "good risk" cases and the "poor risk" cases, it is advised that treatment with anticoagulants be routinely employed in cases of myocardial infarction, unless definite contraindication exists.(4) But the wider application of these results awaited the availability of a truly effective and safe anticoagulant. Coumadin most closely approaches the ideal anticoagulant in terms of safety and efficacy.(5)(6) Its use in myocardial infarction should be routine. Coumadin Sodium has no known side-effects. Hemorrhage from an excessive dosage is not regarded a side-effect. It is an extension of a pharmacologic effect. In those instances where hemorrhage does occur, it can be readily counteracted by vitamin K₁ or menadione.

The contraindications are similar to those for Dicumarol. Coumadin should not be administered in the following conditions: (1) In all types of purpura and other blood dyscrasias, in which there is a hemorrhagic tendency. (2) Liver disease. Patients with liver disease frequently have hemorrhagic tendencies, which suggests caution in administration of the drug.

Nutritional deficiency states and other causes of hepatic insufficiency will require a much smaller amount of Coumadin for induction or maintenance of therapeutic hypoprothrombinemia. (3) Recent surgery on the central nervous system. (4) Ulcerative lesions of the gastrointestinal tract and other inaccessible ulcerations. (5) Dissecting aneurysm, such as a mycotic or berry aneurysm, or a suspected weakening of any vascular wall. (6) Renal insufficiency is only a relative contraindication. (7) Thromboses in patients with carcinoma of the body and tail of the pancreas. Migratory phlebitis or recurrent phlebitis, which characterizes carcinoma of the body and the tail of the pancreas, is in my estimation a definite contraindication to anticoagulant therapy. In such thrombotic states, there already exists a depletion of prothrombin due to hyperutilization.(8)

The pharmacological action of Coumadin is like that of Dicumarol. It affects blood coagulation by causing hypoprothrombinemia. It exerts its initial effect in vivo after a relatively short latent period. The latency results from the fact that Coumadin has no direct effect on circulating prothrombin, but acts by depressing the hepatic production of this protein. Inasmuch as up to 24 hours are required until all the circulating prothrombin in the body is used, the effect of the drug-induced inhibition of its synthesis is not manifest until some hours have elapsed. Coumadin and similar related anticoagulants inhibit prothrombin production by interfering with vitamin K in the liver synthesis of prothrombin. The effect of Coumadin is opposite to that of vitamin K. Coumadin causes hypoprothrombinemia; vitamin K causes hyperprothrombinemia.

I have used Coumadin routinely in myocardial infarction. I have also used it in the following conditions: thrombophlebitis, phlebothrombosis, phlebitis migrans, cerebral thrombosis, cerebral embolus, pulmonary embolus, congestive heart failure, conversion of atrial fibrillation to regular sinus rhythm with quinidine, status anginosus, chronic rheumatic valvular disease with atrial fibrillation and thromboembolic phenomena, axillary vein thrombosis in a patient later proved to have carcinoma of the body of the pancreas.

Patients requiring anticoagulant therapy were given an initial dosage of 50 to 75 mgm. of Coumadin intravenously, after the determina-

tion of prothrombin time. Thereafter, daily prothrombin determinations were made. A single dose of 25 mgm. was required on the average of once every third day. In the hyperreactor, that is, in those individuals who required less of the anticoagulant, 25 mgm. every fourth day was required. The hyporeactor, who required a little more Coumadin, 25 mgm. was given about every 48 hours to maintain a satisfactory prothrombin response. In practically all the cases, a therapeutic hypoprothrombinemia was induced with the average calculated dose given intravenously. Heparin was used during the brief lag period of induction of therapeutic hypoprothrombinemia. It was rarely necessary to use heparin therapy for more than 24 hours, when Coumadin was administered intravenously as the primary anticoagulant.

The intermittent mode of maintenance therapy was admirably suited for ambulatory therapy. With the administration of one 25 mgm. tablet on the average of every third day, equivalent to approximately two tablets or a total of about 50 mgm. per week, there is little to no danger of hemorrhage. It is to be noted that by the intermittent mode of administration for maintenance therapy, each dose is given as the prothrombin time in seconds reverts to normal or conversely as the prothrombin activity in percent begins to rise. Therefore, there cannot be any accumulation of the anticoagulant. Furthermore, this method of administration reduces the cost to the patient, not only in the negligible cost of the drug itself, but in the fact that blood for a prothrombin time determination need be drawn only once a week, and probably even less often than that, when the individual's capacity and response to Coumadin have been observed over a period of time.

The author has had limited experience with the daily administration of Coumadin. However, it has been suggested that a daily dosage of 10 mgm. will suffice for maintenance dosage with adequate safety.(5)(6)

Hemorrhage was encountered in 12 cases, or 8 percent of the cases. With the exception of the patient with the axillary vein thrombosis, who later proved to have a carcinoma of the body of the pancreas with metastases, hemorrhage was characterized by microscopic and gross hematuria. In each case of gross hematuria, hemorrhage was readily and speedily

controlled by the intravenous administration of vitamin K₁ (Mephyton) given intravenously. Several cases of hypoprothrombinemia with prothrombin times varying from 45 to 78 seconds were allowed to regress to therapeutic levels spontaneously simply by withholding maintenance medication. These periods varied from 1 to 3 days duration.

In the one case of axillary vein thrombosis in the patient with carcinoma of the body of the pancreas, later proved by autopsy, a rather alarming hemorrhage resulted from the intravenous administration of 37.5 mgm. as the initial dose.(7) This patient began to bleed from each puncture site, and a gross hematuria was noted several hours after the administration of the Coumadin. The anticoagulant had no salutary effect on the thrombotic manifestations. This is readily understood from the study of the pathologic physiology of thromboses due to carcinoma of the body and tail of the pancreas. The enhanced clotting effect in such instances is due to persistent release of trypsin from the tumor bed into the circulation with failure of the antitryptic mechanism.(8) This failure of the continual formation of antitrypsin accounts for the clotting tendency in carcinoma of the body and the tail of the pancreas. In this condition, there is also a marked depletion of the prothrombin due to hyperutilization, rather than due to a primary defect in formation. Therefore, anticoagulants are not only ineffective in preventing thromboses as a complication of carcinoma of the body and the tail of the pancreas, but it definitely increases the hazards of hemorrhage, as was readily demonstrated in this case. As a matter of fact, the hyperreaction, that is, the marked anticoagulant response and bleeding resulting from only a single dose of 37.5 mgm. of Coumadin given intravenously may be a clue to the clinician that the underlying pathological condition causing the thrombosis may be due to a carcinoma of the body and the tail of the pancreas. As is well-known, this condition is extremely difficult to diagnose antemortem, although it may be strongly suspected. Such hyperreaction to Coumadin, when used to treat migratory phlebitis, should lead the clinician to suspect carcinoma of the body or tail of the pancreas as the underlying causative factor.

Anticoagulants have not reached a desired level of usage because of the fear of hemor-

rhage. This fear has been engendered by the shortcomings of Dicumarol and its congeners. It is the fear of hemorrhage that has given rise to so much discussion of the "good risk" and the "bad risk" patients in evaluation of anticoagulant therapy in coronary artery occlusion and myocardial infarction. In the case of myocardial infarction and other cogent medical indications for anticoagulant therapy, there is only the "good risk" patient in retrospect. With the availability of Coumadin, which most nearly approaches the ideal anticoagulant drug, the danger of bleeding, which will be inherent in any anticoagulant, is certainly minimal and most readily reversible.

Thus, in the opinion of the author, it is no more hazardous to use Coumadin where it is indicated, than to use insulin or digitalis. Certainly, any physician who has ever digitalized a patient or has cared for a diabetic can certainly learn to use Coumadin safely. The undue emphasis on the danger of bleeding has unnecessarily caused many physicians to deprive their patients of the benefits of anticoagulants in thrombo-embolic conditions. This need no longer be the case. The use of anticoagulants need not be reserved for those in the specialties, but can readily be a most potent tool in the hands of the generalist, who takes the time and the effort to learn the few details for most effective administration. All that is needed are proper laboratory facilities and trained personnel for performing the prothrombin clotting time by the single stage method (Quick or Link-Shapiro modification).

Summary: Coumadin has been used in 150 clinical cases requiring anticoagulant therapy. It can be given intravenously as well as orally. A single intravenous or oral dosage of 50 to 75 mgm. will give a therapeutic hypoprothrombinemic response within 24 hours. It has a

great predictability of response. A therapeutic hypoprothrombinemia can readily be maintained by a daily dosage of 10 mgm. or an intermittent dose of 25 mgm. at 3 day intervals. Bleeding, which has occurred in 8 percent of the author's cases, manifested primarily by hematuria, was readily controlled by intravenous vitamin K₁ (Mephyton). No side reactions or toxic reactions, such as dermal reactions or blood dyscrasias, have been observed with Coumadin. It is the opinion of the author that Coumadin can be used in the routine treatment of acute coronary artery occlusion with myocardial infarction, and other conditions requiring anticoagulants, with a degree of safety on the part of the clinician, that is not available in other anticoagulants. Coumadin offers the advantage of low cost to the patient, a factor of particular importance in long range ambulatory treatment. Less frequent prothrombin determinations are needed because of the smoothness of the prothrombin response and absence of cumulative effect.

The author agrees with others(5)(6) that Coumadin possesses properties which make it most nearly the ideal anticoagulant of all those available to date. It deserves universal usage as an anticoagulant.

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PATHOPHYSIOLOGY AND VASOCONSTRICTIVE THERAPY FOR MENORRHAGIA AND HEMORRHAGE ACCOMPANYING PARTURITION

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MENORRHAGIA, according to Bell(1) is excessive or prolonged menstrual bleeding. Metrorrhagia refers to uterine bleeding which is not connected with the menstrual cycle. Lesions, such as cancer, other types of tumors, and abortions can produce uterine hemorrhage. These menorrhagic disturbances, Bell recorded, are not understood clearly. Such disorders might be due to ovarian tumors and various systemic disorders. These physiologic or functional disturbances may show hypertrophic cystic endometria or membranous dysmenorrhea, but the endometrium is often normal and may be in the early or late proliferative phases. Bell records that 75% of the curettements from such cases show normal mucosas. Cancer produces uterine bleeding more often during menopause than in younger females.

Our current interest in menorrhagia stems from our recent post-partum lochial studies. Such patients were treated with a vasoconstricting agent (Kutapressin).^{*} 2 cc. of this material was injected intragluteally daily after delivery. It was surprising to learn that many of these nursing mothers reported significant increases in their lactogenic responses during the above therapy. Perhaps the suppression of such lochial discharges helped to conserve the highly important electrolytic and high protein-containing elements from the uterine discharges for the benefit of these nursing mothers' well being.

An attempt will be made to demonstrate, in this study, the relationship between such supposedly unrelated topics as menorrhagia, chronic passive uterine congestion with venous and arteriolar vasodilatation and excessive uterine bleeding during parturition, which appear to have similar points. Such correlated manifestations appear to be controlled adequately by appropriate vasoconstrictive measures. Furthermore, certain observations exhibited by the

human female are under the influence of basic physiologic and pathologic processes which can be observed rather readily also in certain exudative types of lesions in both sexes.

We have attempted to focus the clinicians' attention on some of these commonly occurring sero-sanguinous discharges from wounds which can become markedly debilitating(3) to such patients if allowed to persist and drain freely without adequate therapeutic control.

Since the effective control and the desirable suppression of such fluid loss to the body's economy appears sound, it may be important to pursue further these investigations for the adequate control of the edematous states observed in other diseases with similar vasoconstrictive procedures.

It was observed that cases of ivy poisoning responded adequately to the use of Kutapressin(4). This material was administered parenterally (subcutaneously or intramuscularly). It was non-toxic and did not produce those distressing allergic side effects which have been observed on occasion with the use of various liver extracts when administered parenterally. Vasoconstriction was produced in the terminal arterioles and capillaries within a matter of about 10 minutes or less after its administration(5).

The concomitant edematous state which accompanies inflammation produces passive congestion in the affected tissues and organs. This undesirable edematous state is characterized by both arteriolar and venous congestion. The vascular structures which supply such an edematous area are dilated markedly. It has been reported that the venous pressure is elevated markedly in patients who exhibit edematous tissues. Indirect (Gaertner) and direct (Cohen) determinations of venous pressures, following the injection of Kutapressin, showed a reduction of venous pressure(6).

The importance of edematous states with their proper control becomes obvious, parti-

^{*}Kutapressin, supplied by Kremers-Urban Company, Milwaukee 1, Wisconsin.

ularly when one realizes that edema is one of the main findings which accompanied such inflammatory processes with many diseases.

Edema is present also in the post-gravid uteri. The profuse exudative (lochial) response which follows childbirth can be debilitating for any woman especially if the volume of flow has become pronounced. Hence, its early suppression and control appears to be accompanied by a more rapid uterine involution with a highly desired conservation of those important electrolytic and protein fluids which otherwise would become lost to the patient.

It is not a great jump from the proper vasoconstrictive control of post-partum lochias to the use of vasoconstrictive therapy for patients with menorrhagia. We believe our readers will discover possibly several clinical correlations between these two phenomena.

The blood supply of any tissue or organ is composed of the arteries with their terminal counterparts, which connect with the venous portion of the circulation by means of venules which carry the blood to the larger veins, and thence to the heart. This system is but a small part of the complete picture. Insufficient stress has been placed heretofore on the terminal circulation and therefore, many clinical investigators have not found it expedient to study this highly important phase of the circulation, and particularly the micro-circulation.

We have found it valuable to consider this aspect of the circulation while studying the vasopressor effects observed with the use of Kutapressin on the terminal vascular components. In order to understand, for example, those changes which accompany menstruation, it is necessary to describe the minute changes which take place in the peripheral vascular areas of both the arterial and the venous uterine components.

Uterine Blood Supply

Blood vessels are found in the lateral uterine ligaments(7). These vessels go to the subepithelial connective tissue in the serosal portion of the muscular area in the uterine wall where they spread in all directions. The muscles and serosal portion of the uterus are supplied by an extensive vascular plexus. At the surface of the subepithelial layer, both capillary and venous plexuses are found.

The uterine lymphatics are supplied by an-

astomosing channels found in the muscular and also the mucous layers, and these lymphatics form a plexus in the serosal layer. They exit via the lateral ligaments and also from the connective tissue of the pelvis and run to the lower lymphatic nodes which are located in the lumbar areas.

Uterine Nerve Supply

Both the spinal and the sympathetic nerves supply the uterus. These structures come from the ganglionic pelvic plexus and enter the serosal layer of the uterus and then supply the muscular areas where they form diffuse plexuses. From these plexuses the sympathetic motor nerves enter the walls of the blood vessels and their muscle layers.

Uterine Histology and Gross Anatomy

The body of the uterus contains tubular, slightly branched glands which traverse the breadth of the mucosal layer in a manner which is similar to a cork screw. Their function is for epithelial regeneration rather than for glandular secretion.

The cervical portion of the uterus contains markedly branched glands which secrete a sticky mucous material. The mucosal layer covers the uterine cavity, whose surface is usually in close apposition but might be separated by debris which is composed of dead cells from epithelial sloughs(7).

The uterus is pear-shaped and is separated into the fundic and cervical portions. The fundic area has 3 layers. From outside inward, first there is the serosal (peritoneal) layer, then the myometrial layer which has two chief sections. The superficial (inside) third layer is called the functional stratum which produces many of the changes seen during menstruation. The deeper and thicker layer, the lower stratum, is not concerned with menstrual changes. The top layer (functional) may be lost completely during each menstrual period(8).

The Human Menstrual Cycle

From the first to the fourth day, the uterus has begun its menstrual cycle in a normal human female. The estrogenic phase of the menstrual cycle takes place from the fourth day until a day or two following ovulation. The endometrium, during this time, grows from two to three times in thickness because it is under the influence of estrogens. The ovarian follicle

begins to mature and proliferates to the surface. The corpus luteum, which appears following ovulation, is readied for secretion a day or two after each ovulation, and the estrogenic phase begins a day or two following ovulation. From the 4th to the 16th day, the endometrium is in the estrogenic phase. After this time, the interval phase occurs when the endometrium is repaired but the effects of progesterone do not become evident. Because of the progesterone secretion, this phase is termed the progestational phase. If conception occurs at this interval, it is called the pro gravid phase. If pregnancy does not take place, the secretory phase comes into being and the epithelial cells begin to secrete. This portion of the cycle occurs about 2 days following ovulation and lasts usually 12 to 14 days. The ischemic phase occurs during the last 2 days of the secretory phase. It is produced by the impairment of the blood supply to the superficial part of the endometrial functional layer. Hence, this layer tends to become ischemic(9). A hormone deficiency due to the vasoconstriction in the coiled arteries then takes place. These arterioles become jack-knifed before menstruation occurs. Hence, endometrial retraction with uterine bleeding may occur due to the withdrawal of estrogen. The breakdown of the endometrial layer is caused by failure in the supply of progesterone. The basal cell layer remains intact during menstruation since it has its separate blood supply.

Maximow and Bloom(10) recorded that four intervals of activity can be ascertained in the endometrial cycle: (1) The follicular phase comprises the first half of the cycle and is associated with a rapidly growing graafian follicle. (2) Pro gravid (lutein phase) is associated with a functioning corpus luteum. (3) Ischemic phase is caused by very little blood passing through the coiled arteries. (4) The menstrual phase is associated with endometrial injury which produces extravasation.

It may be well to recall that the pro gravid phase features a thickening of the endometrium which produces an increase in its secretion with the presence of both **edematous fluid** and intracellular secretion. About 13 to 14 days after menstruation, the ischemic phase occurs in the non-gravid uterus. The coiled arteries begin to constrict about a day or so prior to menstruation. This constricting action blanches the superficial layer for hours at a time. Hence, involu-

tion and shrinking of this superficial layer occur with the loss of its secretion which is composed of edematous fluid and water.

Physiology of Menstruation

With the onset of menstruation, the coiled, constricted arteries open for a short time. Blood exudes from these ruptured vessels into the stroma of the uterus and thence to the uterine cavity. The severed ends of the uterine glands and blood vessels pour out blood which soaks the uterine debris. Uterine bleeding comes from both arterial and venous origin. Usually about 35 cc. of blood is lost during a regular menstrual episode.

Fulton (11) claims that, from 4 to 24 hours prior to the menstrual outflow, there is constriction in the uterine coiled arteries for several hours. Hematomas may be formed by the dilating arterioles and capillaries which bleed for only 30 seconds to a few minutes. Then other coiled blood vessels dilate, hemorrhage, then constrict, but not simultaneously, since various areas go through the same cycle at different intervals.

The Terminal Blood Vessels

Sodeman (12) recorded that blood flow through the capillaries varies with both location and need. For example, with exercise, increased blood flow and oxygen supply, 20 to 50 times as many capillaries open as when the tissues are resting. Those capillaries which communicate directly from arteriole to venule remain open, but other branching channels (A-V shunts) are not always open.

These points can be observed clinically rather easily. If a recently exercised patient is placed in a supine position and a direct venous pressure reading is attempted, the venous blood will spill over the Lester Cohen measuring tube.* However, if the same patient rests 15 minutes prior to attempting this same procedure, the venous blood will not rise high enough to spill over because the venous pressure tends to decrease with rest after exercise.

The walls of the capillaries are composed of thin endothelial cells. These capillary walls act similar to semi-permeable membranes which allow white and red blood cells, even experimentally injected particles, to transverse these walls at the juncture points between these cells.

*The Lester Cohen venous pressure recording apparatus is manufactured by the Becton-Dickinson Co. and is a handy method for determining direct venous pressure readings.

Here the intercellular cement is found, and this substance may be involved markedly with the process known as capillary permeability. The intercellular cement is said to be composed of a mesh of calcium proteinate. This mesh is thought to exhibit tiny holes of different sizes which allow various liquids and solutions to pass rather easily(13). In this region certain dispersing fluids, as hyaluronidase, dissolve the intercellular cement and thereby allow an increased flow through such an area. Capillary pressure, according to Sodeman, at rest and at heart level, is above the osmotic pressure of the plasma proteins on the arterial side. This capillary pressure is below the osmotic pressure on the venous side. It can become lowered by arteriolar constriction, while dilatation produces an increase in capillary pressure.

According to Sodeman(14), arterioles and venules are connected by arteriovenous capillaries which are incompletely surrounded by smooth muscle cells. Exuding from these thoroughfare channels are true capillaries through which the fluid is controlled by sphincters at their origin from the arteriovenous capillaries. The true capillaries rejoin the arteriovenous capillaries distally. Phasic dilatation and constriction of the arterioles, arteriovenous capillaries and precapillary sphincters (vasomotion), produce periods of filtration followed by periods of fluid reabsorption.

Sodeman observed the effective hydrostatic pressure was the differential pressure between the tissue and capillary pressures, while the effective osmotic pressure was the differential osmotic pressure between the plasma and the extravascular fluid(15).

Venous Pressure

Sodeman(16) contributed a very important point when he stated that even an increase of 9 millimeters of water in the venous pressure can produce a tendency for the formation of an edematous state because of the predominance of filtration over reabsorption. Venous pressure appears to be a very labile phenomenon. This venous pressure is a measure for the tension of blood in veins. According to Pullen(17), it is the residual pressure from the level of the heart's right auricle to the place where this pressure is being measured. Placing the area to be measured at heart level negates the action of gravity when the patient lies down. The

normal venous pressure reading is between 4 to 10 cm. of water or 3 to 8 mm Hg.(18). Any sort of obstruction in this system tends to raise the pressure. When it reaches 16 cm. of water pressure, the presence of edema usually can be ascertained clinically. Hence, the verification of an edematous state can be rather an easy scientific procedure with the use of a direct type of venous pressure measuring apparatus.

Functional or Physiologic Menorrhagia

At the outset of this paper we recorded Bell's findings in relation to the production of this type of uterine bleeding. This form of uterine hemorrhage might be produced by physiologic rather than by anatomic disturbances. Such physiologic disruptions are not understood readily, for no definite explanations have described the exact reason or reasons for such derangements in uterine physiology which produce this particular type of menorrhagia.

We observed this disorder quite commonly in our separate practices. Treatment has ranged from tamponade to the use of many types of glandular therapies, all without too much success.

In those cases with functional uterine hemorrhage, the uterus exhibits marked vascular congestion with profuse edema, according to Boyd(19). Furthermore, the importance for controlling hemorrhage in the terminal portion of the vascular tree has been emphasized by Mac Bryde(20) who focused attention on the importance of controlling the capillary areas for proper hemostasis. He stated that the capillary bed assumes "ominous significance" in cases of trauma which produce hemorrhage. He recorded that each cubic millimeter of blood is exposed to approximately 4 square feet of endothelial surface (mostly in the capillaries) in its traverse of the circulation(21). As we noted previously, the arterioles and capillaries of the uterine areas are involved obviously in cases which exhibit physiologic menorrhagia. Hence, the proper therapeutic attack should incorporate the adequate control of these peripheral vascular areas by means of vasoconstriction.

Therapy

The pharmacologic approach to the treatment of menorrhagia must depend mainly upon those drugs which possess the power of vasoconstriction. Perhaps the most powerful drug of this type is epinephrine which appears to be the

main factor for producing a rise of systemic blood pressure because of its property of vasoconstriction(22). The ergotoxine and the ergotamine group of drugs appear to be related closely chemically and pharmacologically(23). These preparations have been employed to check hemorrhages of the uterus, but Sollmann claims these drugs are probably of little value apart from obstetric conditions(24). Apparently these drugs do not increase systemic blood pressure unless ergot is injected intravenously(25). Histamine lowers systemic blood pressure by dilating the capillaries. Posterior pituitary gland preparations can produce persistent vasoconstriction(26), but to our knowledge, these preparations are not employed usually to control uterine hemorrhages adequately.

Recently, while studying the effects of Kutapressin on the capillary bed in the temporal bulbar conjunctiva with a capillary biomicroscope, Lee(27) observed arteriolar constriction in 10 patients; he reduced velocity of blood flow in 9 patients, and augmented responsiveness to epinephrine in 13 patients, and noted an increased spontaneous vasomotor action in 6 of the 14 patients who were studied. Kutapressin was dropped on the conjunctival capillary bed of 14 human patients in this research. For this work, the Kutapressin was labeled RB11-40.*

The above study readily demonstrates that Kutapressin vasoconstricts the capillaries and arterioles in man. Similar observations, which demonstrate the clinical effectiveness of Kutapressin for the treatment of various diseases, have appeared in the medical literature sporadically. Clinical improvement was noted in various types of exudative diseases, but each of these diseases had one outstanding and important point in common. Each disorder exhibited the presence of tissue edema, which is one of the cardinal signs for inflammation(28). Kutapressin did not produce a rise of systemic blood pressure in any patients, although it produced capillary and arteriolar vasoconstriction in these cases.

Increased venous pressure can be an important finding which accompanies tissue edema. Of the two extremes in venous pressure, the low phase of venous pressure can produce shock

and thrombosis, while a high venous pressure tends to increase edematous states. There is no apparent relationship between the range of venous and arterial pressures, according to Christian(29).

In the arterial component of the vascular tree, arteriolar constriction produces somewhat of a fall in pressure in the capillaries, while an increase in venous pressure produces an increase in capillary pressure(30).

Starling's hypothesis of fluid balance is in accord with the direct pressure readings found in human capillaries. A fall in blood pressure does not stop in the area where the arterioles develop into the capillaries, but it continues unabated throughout the capillary loop. The average blood pressure in the arteriolar areas is above, and in the venous limb, it is below the osmotic pressure of the plasma proteins, according to White(31).

Kutapressin Therapy

An increase of nine millimeters of mercury in the venous pressure, according to Sode-man(31) can give rise to an "edema tendency" due to the predominance of filtration over reabsorption. Conversely then, a decrease of the same amount in the venous pressure should help to alleviate such an edematous state, if present.

We have noted a decrease from 30 to 60% in the direct (Cohen tube technic) and also the indirect (Gaertner) venous pressure readings in patients after the clinical use of Kutapressin. Since edema is present in many cases with functional or physiologic menorrhagia, we treated 36 such patients with 2 cubic centimeter doses of Kutapressin which were administered subcutaneously daily to each patient.

In every case, we observed a marked reduction in the previously heavy menstrual flows in these patients who related that the reduction in the amount of uterine hemorrhage could be noticed within twelve hours after the initial administration of Kutapressin.

These findings are quite similar to the data we recorded previously in cases with postpartum lochial discharges which were treated with Kutapressin(33). There were no complications from this type of therapy which was well received by these debilitated patients.

Rather recently our group of investigators observed another application for the use of vaso-

*RB11-40 was regular Kutapressin prepared without the addition of $\frac{1}{2}\%$ phenol. It was found that Kutapressin with $\frac{1}{2}\%$ phenol caused vasodilatation due to local irritation when it was dropped directly on the conjunctivae of human subjects. Hence, Kutapressin without phenol was used for this particular study by Lee.

constrictive measures in the treatment for exudative phenomena. This therapeusis concerned patients who underwent cholecystectomies and had drainage tubes inserted to facilitate more rapid convalescence. Such post-operative sero-sanguinous biliary discharges in the surgical dressings were noted to dry up much faster when Kutapressin was administered to these cases with daily doses of 2 cubic centimeters (administered subcutaneously).

We noted that such abdominal discharges became scanty around the 3rd post-operative day when the abdominal drains were removed. By the 5th day, the wounds were practically dry.

These observations resemble those findings which were noted with the post-partum lochial discharges which cleared around the same length of time after delivery. In both types of cases the healing rates appeared to be far more rapid than with those many cases who did not receive the vasoconstricting benefit from Kutapressin.

However, for those colleagues who desire to effect a faster and more complete eradication of such post-operative abdominal discharges following biliary surgery, we suggest that daily 2 cubic centimeters subcutaneous injections of Kutapressin be employed to assure more complete and faster wound healing plus the rapid elimination of drainage in those patients who submit to extirpations of the gall bladder. This vasoconstrictive procedure can be administered with safety. No contraindications for its use are known at this time, and no ill effects have been encountered during the time Kutapressin has been used clinically by our group.

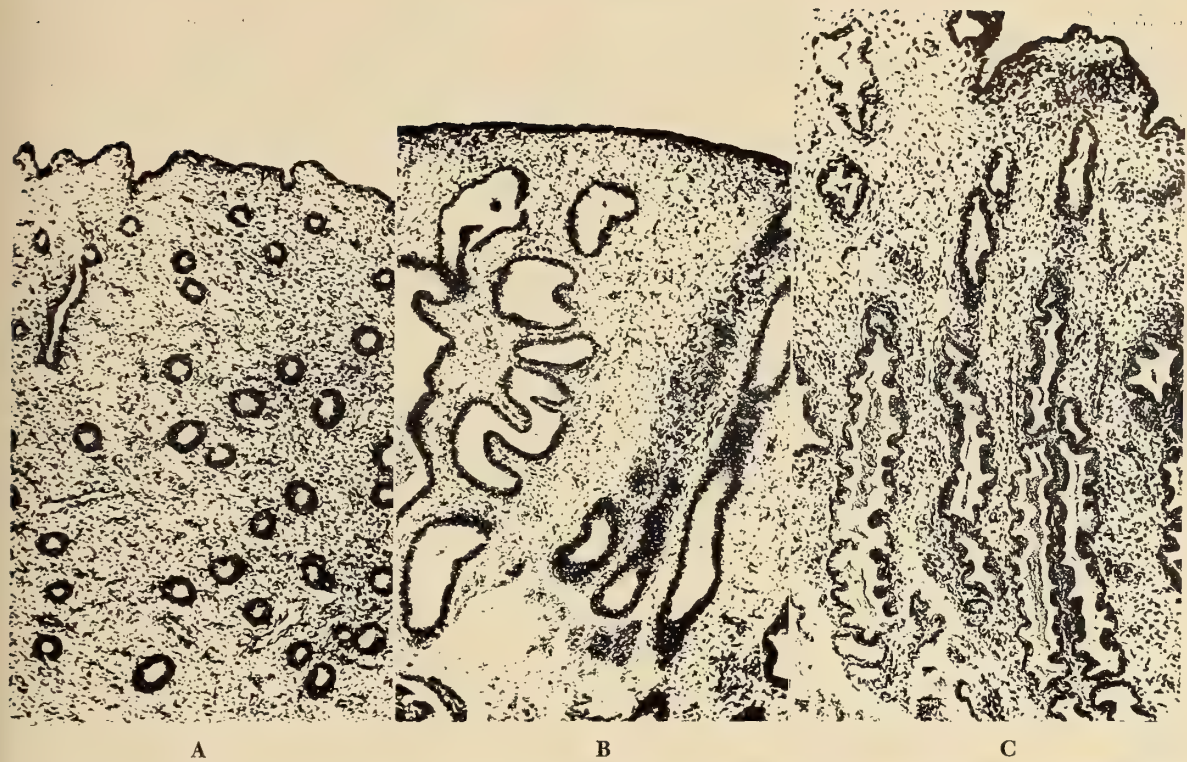
According to Overman(34) vasodilatation, per se, of the capillary bed leads to an increased filtration pressure in the capillaries. Also, there is an increased accumulation of extravascular fluid which is largely deproteinized plasma. The volumetric pressure relationship across the endothelium becomes disturbed, which leads to further fluid extravasation. Under normal conditions the process of filtration exceeds reabsorption into the capillaries. The excess fluid is absorbed by the lymphatic drainage. These fluid accumulations, according to Overman, which result from an excess of filtration over reabsorption and lymph drainage can and do increase local lymphatic obstruction and there-

by produce an added amount of edema formation. Overman observes "There is, of course, ample physiological rationale for the employment of vasoconstrictive measures in combating edema."

Our therapeutic procedure, in this study, was employed to prevent excessive menstrual flooding in functional cases of menorrhagia. However, the same procedure for combating hemorrhage, and even the formation of edema where such exists, has not, to this date, confronted us with any apparent contraindications for the use of these vasoconstrictive measures.

A patient who was 8 months pregnant developed a severe acute enteritis with a moderate amount of rectal bleeding. She was given 2 cc. of Kutapressin subcutaneously to control this bleeding due to gastrointestinal hemorrhage. The medication proved very effective by stopping the bleeding. Later that evening she went into active labor and delivered a premature male infant, whose weight was 5 pounds, 4 ounces. This infant died a few days later because of paratyphoid fever. It was our opinion that the enteritis produced early labor. Later findings proved that paratyphoid fever was the cause. Apparently she had infected her child with this disease.

The amazing finding at the time of this delivery, which was about 6 hours after Kutapressin administration, was that her labor was exceedingly easy. She lost approximately 10 cc. of blood during the entire course of her labor which was aided with the application of perineal forceps (Simpson). This very light blood loss at the time of delivery is what we would expect in the light of our previous experiences with this vasoconstricting preparation. On many occasions, during Cesarean sections, we have witnessed a marked hemostasis during such major surgical procedures with Kutapressin. The same hemostatic results when Kutapressin is administered pre-operatively in cases undergoing tonsillectomies(35) further fortifies our contention that this material acts as an extremely valuable vasoconstrictor of the capillaries and arterioles. In light of our current findings by employing Kutapressin in women who are undergoing the onset of labor, we are now administering this material routinely to conserve the hemapoeitic elements which otherwise might be lost by active uterine hemor-



Cyclical changes in the endometrium. A. Post-menstrual (oestrin) phase. B. Intermediate stage (fifteenth day). C. Premenstrual (progestin) phase (23rd day). All specimens are curettings. x 67.

rhages. We also have cause to believe that this vasoconstricting procedure may prove to be very valuable in controlling certain cases of threatened abortions. Such cases have been treated in a highly adequate manner to prevent possible uterine hemorrhage with abortion. To date, we have experienced no failures, although our case series is small, and the placental separations may not have been complete.

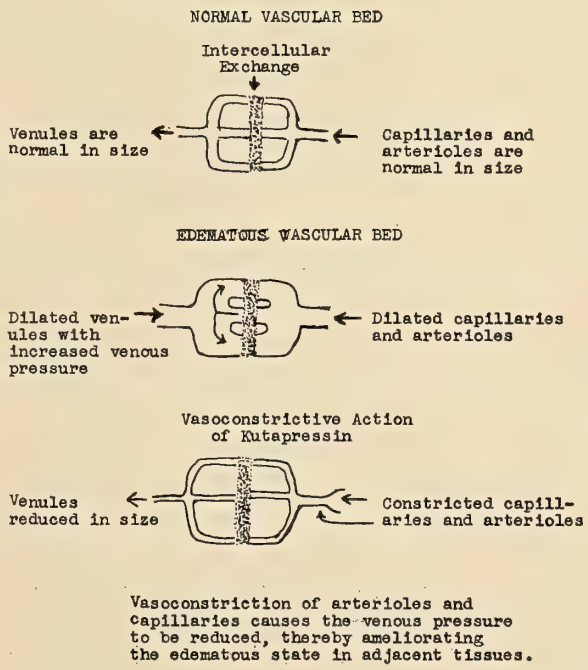
Hence, we urge that Kutapressin be administered at the onset of active labor, certainly before or at the latest during the second stage of labor. Daily Kutapressin injections should be continued to control the post-partum lochial discharges, to control possible hemorrhage, to foster a more rapid uterine involution, and to give such patients the benefit of an increased lactogenic response, particularly if the mother desires to nurse her offspring.

We observed that, after the delivery of the placenta, the Kutapressin treated mothers' uteri became firm even without the use of oxytocic agents, although we continue to give one injection of this latter material immediately after the delivery of the placenta just to be on the safe side.

It has been our experience also that there

is no difficulty of the separating placenta becoming trapped by the uterine walls. We found that deliveries of the placentas where not impeded in any manner when Kutapressin was

PHARMACOLOGY OF KUTAPRESSIN



administered before or during labor.

Recently we delivered an adipose, chubby woman with a very shallow pelvis. She had an occiput posterior presenting child. The patient experienced great difficulty attempting to bring down the child's head. A pudendal block anaesthesia finally relaxed her perineal musculature so that, at length, the fetal head descended enough to allow Simpson forceps to be applied to the head. It was rotated and the child was delivered. The baby was cyanotic, and the child's upper respiratory tract was full of mucus. Oxygen therapy and suction helped to restore proper breathing and good color to the infant.

About four hours following this delivery, the child experienced several severe attacks of hematemesis. A careful examination of the child revealed no apparent cerebral pathology nor intestinal obstruction. One cubic centimeter of Kutapressin was administered intragluteally to the child to control the apparent gastric hemorrhage. In the matter of four hours following the above procedure, the child stopped vomiting blood, and the infant made an uneventful recovery with a dose of one cubic centimeter of Kutapressin administered intragluteally daily for 3 days. When hematemesis occurs, as it does at times following difficult labors, it might be caused by the swallowing of toxic and very irritating material during its descent through the birth canal. Washing out the infant's stomach with physiologic saline solution, which is recommended at times, will not control gastric hemorrhage if present. Furthermore, we do not have much faith in the efficacy of vitamin K as a coagulant for the adequate control of those cases with internal hemorrhage.

Hence, we suggest the use of Kutapressin in such cases, since its administration is both very safe and easy to use. Furthermore, and by far more important, it may prove to be a life-saving procedure for such cases with internal hemorrhage.

Some of our colleagues have asked just how quickly the effects of Kutapressin (evidenced by arteriolar and capillary vasoconstriction) can be expected. We maintained repeatedly that these effects appear to be almost instantaneous. We observed vasoconstriction of the skin in seconds after this medication had been administered. Changes noted by the dropping of

venous pressures after the use of Kutapressin have been similar, as has evidence for the control of capillary hemorrhage very soon following the administration of this drug, also for treating severe cases of angioneurotic edema and nose bleed. The above contention appears to be confirmed, because Friedberg(36) found the normal circulation time (arm to tongue test) to be from 9 to 16 seconds.

Sodeman(37) feels that many other factors might be responsible for the decreases in venous pressure which we have observed following the use of Kutapressin. "These relate to the degree of this drop and its statistical significance, to the clear cut action of the Kutapressin, to the generalized versus localized action of the drug and other factors. . . . For example, that the material if acting locally in certain areas of the body could shift blood mass and create differences on that basis."

However, we have good cause to believe that this vasoconstricting property of Kutapressin is generalized in nature. We have observed its action in many portions of the body and in various and sundry types of disease processes, some of which have been mentioned heretofore in this paper.

The reaction to inflammation also affects practically every part of the human organism. The presence of edema, an important finding, which is associated with inflammation, might tend to become more or less localized. Yet the therapeutic action from the use of Kutapressin appears not to be localized to any particular area. On the contrary, the effects from Kutapressin therapy appear to be quite generalized in nature. Hence, we cannot agree with those suggestions which Professor Sodeman kindly offered in our behalf.

Dr. Richard E. Lee(38) believes that vasoconstriction which is produced through the action of Kutapressin produces a drop in venous pressure not alone from the vasoconstriction on the arteriolar side only. He thinks the reduction in the amount of blood which flows through the capillary vessels, per se, might be produced by the vasoconstriction. However, a compensatory dilatation of the arteriovenous shunts might take place to keep such veins filled. Peripheral venous dilatation of the larger venules and small veins in certain key areas, such as the splanchnic, might aid in producing

this drop of venous pressure. Lee thinks this latter action would act to trap the blood in the distal radicals of the venous tree, which would constitute a far more effective method to reduce (venous) pressure in the great veins of the body.

We support the suggestion advocated by Dr. Lee, because the above theory appears quite logical and is well within our concepts which have been culled from our varied clinical experiences with this vasoconstricting agent, Kutapressin. Incidentally, our clinical findings appear to be also in accord with those experimental observations made by Dr. Lee for his highly interesting biomicroscopic studies which we have abstracted heretofore.

Hartroft(39) wrote recently: "The catastrophe of fatal gastro-intestinal hemorrhage strikes, and often falls at a single blow, individuals still in the prime of life, and the critical diagnosis, treatment and management of these cases is therefore doubly important. I hope that in the future we physicians will be faced with an ever diminishing number of this type of autopsy. We eagerly await newer discoveries and advances which will stay this tragic series of events culminating in fatal hemorrhage of gastro-intestinal origin."

Sudden death can occur because of any type of serious, uncontrolled bleeding. We hope the information we have presented in these pages will prove to be a major step for eliminating all types of internal capillary hemorrhage which has plagued clinicians throughout the ages.

Summary

Basic pathophysiologic relationships are described which relate to menorrhagia, chronic congestion, various aspects of the arteriovenous system and uterine hemorrhage during parturition. The process of edema formation is considered with the exudative findings in various diseases such as poison ivy cases and the lochial discharges which follow obstetrical deliveries and the abdominal discharges which follow cholecystectomies. The value of direct and indirect venous pressure recordings is discussed also. A short review of the anatomic and physiologic findings of the human uterus is discussed with emphasis being placed on the terminal vascular supply of this organ. The physiology of menstruation is then reviewed with emphasis being placed on the terminal

vascular supply.

The entity known as functional or physiologic menorrhagia is reviewed along with a new therapeutic attack through the vasoconstriction of the arterioles and capillaries. Emphasis is placed on the role played by the venules of the arteriovenous areas. The rationale of Kutapressin therapy is explained though its vasoconstricting effects on these vascular areas. Emphasis is placed on the lowering of the venous pressure readings which serve as a measure for the extent of these edematous states which accompany the basic and highly important presence of inflammation.

Several current comments and opinions from expert investigators are discussed briefly in our attempt to give an understandable and an applicable account of the *modus operandi* which is connected with Kutapressin therapy. Several clinical experiences are related in order to correlate both the biologic and clinical aspects of various diseases with this vasoconstrictive therapeutic approach. Emphasis, in this respect, is placed upon controlling hemorrhage during the second and third obstetrical stages with this vasoconstrictive treatment. Our recent findings indicate the therapeutic action from Kutapressin is not of a localized nature; its action is exceedingly rapid as is its efficacy and spontaneity.

Acknowledgement:

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RECURRENT PULMONARY DISEASE IN CHILDREN THE SINO-BRONCHIAL SYNDROME

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AN AVERAGE child might contract by chance one or two significant respiratory infections a year, but should bronchitis, or pneumonia, or croup reoccur every few weeks, then some factor other than random exposure to infections must be considered. Recurrent pulmonary infections may present such a serious problem that the family abandons home and job in the desperate hope that a change of climate will prove beneficial. Unfortunately, the migration often fails in its purpose.

In childhood, a common source of repeated pulmonary infections is purulent drainage from the paranasal sinuses — the so-called sino-bronchial syndrome. This condition has been known by many other names, i.e. chronic sinusitis associated with cough, nasopharyngeal and mediastinal lymphadenopathy, chronic non-specific cough in children, etc. It is defined as a sub-acute or chronic infectious process involving the mucosa of the paranasal sinuses, with secondary implantation of infection upon the mucous membrane of the bronchi through postnasal drainage and with subsequent production of hilar infiltration and focal pulmonary lymphadenopathy(1).

This paper describes the mechanisms responsible for sinusitis and its pulmonary complications, with special reference to management utilizing positive-pressure inhalation of aerosol medication.

MECHANISM

The knowledge that the paranasal sinuses are incompletely developed in early life has resulted in the common misconception among physicians that sinusitis does not occur in children, yet, it ranks as one of the most common diseases of childhood(2).

Of the several sinuses, the maxillary is the most commonly involved in children. Its cavity is well developed at birth and maxillary contents have been reported in stillborns. The ethmoidal cavities are present at birth but remain small under five years. The sphenoid sinus is very small during the first year, and the frontal sinus is rarely visible roentgenologically before the third year(3).

The sinus cavities connect with the nasal passageway by relatively small openings which easily become obstructed. Children are particularly vulnerable to nasal obstruction because of their frequent upper respiratory infections, their inadequate removal of nasal mucus by "blowing" and their abundant lymphoid tissue which readily hypertrophies with infections. When drainage from the sinuses is impaired, the retained secretions become thickened and may become invaded by virulent organisms. This material discharges into the nasal cavity and passes into the nasopharynx more readily than through the external nares, thus a considerable postnasal drip may be present without evidence of a "running nose." In the upright position, the material passes into the pharynx and is usually swallowed. However, when a patient is asleep, this drainage may be aspirated into the lower respiratory tract since swallowing is more difficult without the aid of gravity and because the awareness of accumulated secretions in the pharynx is decreased with sleep. Experimentally, it has been shown that lipiodol instilled into the paranasal sinuses will drip into the lungs particularly when asleep(4). The aspiration of nasopharyngeal material initiates the cough reflex. If the aspirated material contains virulent organisms, infection of the bronchial mucosa and the associated lymph glands follows. Chronic implantation of such infectious material in the bronchial tree is assumed to be a common cause of bronchiectasis(4).

CLINICAL FEATURES

SYMPTOMS:

(a) **Cough** — A cough which is more pronounced at night (when recumbent) or on awakening (more aware of accumulated secretion) is characteristic of the sino-bronchial syndrome. In contrast, the cough of other types of infectious bronchitis is more pronounced on exertion and usually diminishes when at rest. (b) **Laryngeal Irritation** — Recurrent attacks of croup or nocturnal hoarseness occur by virtue of irritation of the larynx by the postnasal drainage. (c) **Gastric Irritation** — Epigastric and periumbilical pain may occur, (sometimes accompanied by nausea or vomiting) primarily at long

intervals following meals, as before breakfast or in the late afternoon before supper. These symptoms are due to gastric irritation and perigastric lymphadenitis resulting from the swallowed purulent drainage. (d) **Fetid Breath** — In the absence of extensive caries, a chronic "bad breath" in children is usually due to the odor of infected material emerging from the sinuses. (e) **Nasal Symptoms** — Excessive, thickened nasal secretion, particularly when there is considerable accumulation of mucus in the nose each morning, is indicative of infection in the paranasal sinuses. Discoloration and thickening of the mucus indicates bacterial contamination of the sinus contents. Edema and hypertrophy of the nasal mucosa may result in blockage of the nasal passageways necessitating mouth breathing. However, postnasal drainage from the sinuses may occur without obvious impairment of breathing through the nose. Nosebleeds may occur as the result of local irritation.

PHYSICAL FINDINGS:

(a) **Nasal Passageways** — Purulent material may be present in the nasal passageways or seen emerging from beneath the turbinates. The nasal mucosa may be pale in appearance if allergy is the primary factor responsible for mucosal edema but reddened if infection is present regardless of the presence or absence of allergy. (b) **Pharynx** — A purulent discharge frequently can be seen running downward from the nasopharynx particularly if the patient gags. On occasions no drainage can be seen at the moment, but the posterior lymphoid tissue is hypertrophied giving the appearance of "the granular pharynx." The tonsils and particularly the adenoids may also be irritated and exhibit enlargement and inflammation. (c) **Lymph Glands** — Enlargement of the cervical lymph glands may occur as the result of extension of infection from the pharynx or tonsils. (d) **Chest** — Pneumonia, bronchitis or bronchiectasis occurring as the result of aspiration of sinus drainage gives the usual findings on auscultation. However, the sino-bronchial syndrome may result in considerable cough without the presence of abnormal chest findings on physical examination. The roentgenogram indicates hilar adenopathy and prominence of the major bronchovascular markings particularly in the dependent portions of the lung. (e) **Sinuses** — Tenderness or redness over the involved

sinuses is rarely present in children. However, roentgenograms usually indicate sinusitis, except in the early stages.

TREATMENT

Treatment of the sino-bronchial syndrome must be directed toward the sinusitis as well as the pulmonary complications. Too often the troublesome night cough, the cervical lymphadenitis, the laryngitis or the bronchopneumonia receive exclusive attention. Antibiotics given for these complications of sinus discharge usually result in temporary improvement of the sinusitis but unless adequate drainage of the sinus is established, the retained secretions may again become purulent and the complications of sinus drainage will reoccur.

INTRANASAL MEDICATION:

Recent years have seen great improvement in preparations for local intranasal use. The reluctance of patients and physicians alike to use nose drops is based on results obtained 20 years ago and do not apply to today's medications. Modern investigation has revealed that the ideal intranasal medication should be (a) slightly acid in reaction, (b) buffered to maintain constant pH, (c) isotonic, (d) non-irritating and (e) should not interfere with ciliary activities. Such a preparation should produce rapid and effective vasoconstriction without interfering with the normal physiologic mechanisms which aid the nose in its own reactions. In addition, such a preparation should produce little or no rebound congestion and no systemic manifestations(5). The plastic spray containers are more acceptable to children and are more certain in administration should the child be uncooperative. Every parent should be instructed in the proper use of these nasal sprays — the child sits erect, the head is tilted slightly forward, the spray is directed somewhat backward (yet the bottle must be pointed above the horizontal or a spray is not produced) at an angle permitting the medication to pass into the nasal cavity. Two or three vigorous "squirts" should be used every 3 or 4 hours in each nostril, the child being encouraged to sniff between each "squirt" to pull the medication well into the nasal passageway. The nature of the nasal secretions will influence the composition of medication to be used. If the mucus is not discolored nor unusually

thick, preparations such as ephedrine or Neosynephrine are adequate. If allergy is a factor, preparations containing hydrocortisone are particularly valuable. If the discharge is tenacious or discolored, best results are obtained using a preparation containing a detergent, an antibiotic and a decongestant in combination.

To insure that drainage of the sinus cavities is complete, intranasal medication should be continued beyond the time when the cough, the nasal obstruction, the running nose, etc., have disappeared, then discontinued gradually.

EXPECTORANTS:

Thickened, tenacious mucus will drain poorly from the paranasal sinuses. Thinning of the secretions is aided by the administration of one of several preparations. (a) Saturated solution potassium iodide is one of the most convenient to use. A rough guide to dosage is one drop per year of age given t.i.d. with a minimum of 2 or 3 drops t.i.d. (b) Calcium iodide is available in tablet form (Calcidin) or in flavored vehicles (Calcidrine Syrup). (c) Ammonium chloride is commonly employed in various expectorant compounds.

These should be given until all evidence of thickened mucus is gone, then gradually reduced.

ANTI-INFECTIOUS AGENTS:

Even though fever may be absent, if the sinus drainage is thickened, discolored or of long duration, the administration of systemic antibiotics or sulfonamides is beneficial. The complications of sinus drainage (bronchitis, pneumonia, etc.) will, of course, be benefited by antibiotics.

INHALATION THERAPY:

The use of steam inhalation serves to add moisture to the nasal contents and reduces the irritating, drying effect of inspired air to the throat, larynx and bronchi, particularly when the patient is forced to mouth breath. The use of tincture of benzoin, "Vicks," etc. in the water is often irritating.

Steam vaporizers usually employed at home are inadequate even in the smallest room. Partial enclosure of the child's crib or bed by sheets, etc. will multiply the humidifying effects of steam.

More efficient humidification (and without

added heat) is afforded by using a continual aerosol of either distilled water or a wetting agent (Alevaire). Gas under pressure, supplied by compressed oxygen or an electric compressor, is passed through a nebulizer such as DeVilbiss No. 841.

Intermittent positive-pressure breathing using the Bennett apparatus has proved a valuable means of introducing medication into the upper and lower respiratory passageways (6, 7). This apparatus employs a mask which fits over the nose and mouth. Under appropriate positive-pressure, a fine aerosol is introduced into the respiratory passageways on inspiration but a sensitive valve interrupts this flow at the onset of expiration. When the nasal passageways are blocked with mucus or edema little of the nebulized medication can reach the sinus cavities since the patient must mouth breathe almost exclusively. After the intranasal spray and expectorants have improved the nasal air exchange, medications can reach the sinuses when the Bennett apparatus is used. However, its greatest benefits are derived from transporting locally effective antibiotics, detergents and broncho-dilators into the lower respiratory tract, comparable to the manner in which the nasal sprays apply medication locally into the nose. Whenever there is evidence, either by the presence of a severe cough, by positive roentgenogram or by auscultation, that the lower bronchial tree contains thickened mucus, the use of the Bennett apparatus may be beneficial. Patients under 5 years of age rarely are capable of cooperating. Treatments are given from one to four times daily as indicated, each treatment lasting 10 to 20 minutes. The positive-pressure may be set at 10 to 20 cm of water pressure depending on the vigor of the patient's expiration. The solution used in the nebulizer should contain a detergent, an antibiotic, and a broncho-dilator. An effective formula is as follows: Alevaire 2 cc, Isuprel ½ cc of a 1:200 solution, neomycin ½ cc of a solution containing 50 mgm per cc.

ANTI-ALLERGIC TREATMENT:

Obstruction of the nasal passageways occurs commonly in allergic conditions and may lead to sinusitis and sinus drainage. Should the allergic condition be severe, allergic investigations and subsequent desensitization may be required.

Antihistamines are valuable in decreasing the nasal swelling and excessive mucus production associated with nasal allergy. However, antihistamines may worsen sinusitis if given without accompanying expectorants and local therapy. One action of antihistamines is to decrease secretion by the mucous glands. If at the onset of treatment the retained sinus secretions are thickened, antihistamines will serve to render them more tenacious.

RADIATION THERAPY:

Radiation therapy, using either radium or x-ray, has been advocated to reduce the hypertrophy of lymphoid tissue commonly associated with sinusitis in children (1, 2). Using x-ray, the average child may require three treatments a week with a maximum of 12 treatments. Beneficial effects on mucosal congestion and lymphoid hypertrophy are apparent two weeks after treatment.

SURGICAL TREATMENT:

Surgical procedures to improve drainage from the paranasal sinuses are rarely necessary in childhood. Likewise, surgical removal of mucosal polyps is seldom required since they usually regress with proper medical treatment or radiation therapy. Hypertrophied adenoid tissue also regresses when postnasal drainage ceases but adenoidectomy is sometimes necessary to remove obstruction. Tonsillar enlargement associated with the sino-bronchial syndrome is a result of postnasal drainage, not a cause, and tonsilectomy does not benefit the sinusitis.

CASES

CASE I — M.F.A., a 12 year old girl, was first seen in my office in August 1955, because of severe pulmonary disease of six months duration diagnosed as fibrocystic disease. She had been in good health, weighed 98 pounds in February 1955, and was attending school regularly. In April 1955, a "cold" began with considerable cough, particularly on awakening in the morning, occasionally accompanied by vomiting. Her cough persisted in spite of medical treatment. By June 1955, she had lost 18 pounds and she was advised to move to a drier climate. However, in Arizona she continued with cough, daily vomiting of mucus, frontal headaches and weight loss to 77 pounds

on July 1. Physical examination in August 1955, revealed purulent mucus in the nasal passages and posterior pharynx. Auscultation of the chest revealed only occasional ronchi. Roentgenogram of the chest disclosed considerable mediastinal widening and prominence of the bronchovascular markings throughout the lungs, more prominent in the dependent portions. Diagnosis was sino-bronchial syndrome and treatment was begun consisting of nasal spray q 3-4 h (Biomydrin); saturated solution potassium iodide, 15 drops t.i.d. oral tetracycline and supportive therapy. Her improvement was rapid. The daily vomiting of mucus ceased within a week. Her appetite improved and within a month she had gained 10 pounds. When last heard from in January 1956, she was in good health.

CASE II — M.H., a 5½ year old boy, was first seen in March 1956, because of a severe cough. Similar pulmonary infections had occurred since one year of age during the winter months, always as part of a "cold." In the six months immediately preceding his first visit, there had been at least one pulmonary infection a month with fever severe enough to require bed-rest and antibiotics. Hospitalization had been resorted to on two occasions. Neither intranasal medication nor expectorants had been prescribed. When examined in March 1956, the nasal passageways contained a purulent yellow discharge. Auscultation of the chest disclosed a few squeaks bilaterally. The temperature was 99.6 orally. Treatment consisted of nasal spray q 3-4 h (Biomydrin-F); saturated solution potassium iodide; 8 drops t.i.d.; penicillin and streptomycin; and supportive therapy. Improvement was rapid; he slept without cough or vomiting the day medication began. His sinus drainage cleared within a week. When last heard from in September 1956, there had been no recurrence of symptoms of the sino-bronchial syndrome.

SUMMARY

1. Sinusitis is common in childhood although frequently overlooked.
2. Drainage of purulent material from the paranasal sinuses implants infection in the lower respiratory tract and is a common cause of recurrent pulmonary infections in children.
3. Unless the sinuses are cleared of retained

secretions, drainage of purulent material may reoccur resulting in repeated infection of the lower respiratory tract.

4. Principles of treatment of the sino-bronchial syndrome are outlined, including intranasal medication, expectorants, antibiotics and aerosol inhalations. The Bennett apparatus affords an excellent means of introducing medication locally into the lower respiratory passage-way.

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MONGOLISM AND ACUTE LEUKEMIA

A Case Report

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RECENT reports of the occurrence of leukemia in children suffering from mongolism has focused attention upon these relatively rare disorders. The first case of leukemia in a Mongoloid child was reported by Brewster and Cannon(1) in 1930. Since that time, until this year, no further reports have been made. Krivit and Good(2) report four cases and Marrit and Harris(3) an additional four cases. The normal incidence of Mongolism is said to be about 1 per 500 live births. Leukemia in the below five year age group is said to be about 5/100,000 population. According to Krivit and Good this would give an expected occurrence of leukemia-mongolism in this age group of about 1/10,000,000. Sixteen children diagnosed leukemia have been admitted to Saint Mary's Hospital in the period January 1945 through 1955. One of these, the case to be reported, was a mongoloid child.

The observation of the occurrence of these two disorders directs attention to the time of fetal life when it is believed the development of Mongolism occurs. It is thought that a type of stress is placed on the embryo at sometime between the sixth and ninth weeks of fetal life. Granulocytes are found at the seventh week and lmyphoblasts at the eighth or ninth week. This leads to the possibility that the same stress that produces mongolism may alter the bone marrow with subsequent development of leukemia. Recent studies have extended the concept that leukemia may be transmitted by a filterable agent. This thought leads to further speculation in that the leukemia producing agent may enter the fetus and be responsible for the production of Mongolism. The case to be reported offers nothing new and is reported for statistical reasons primarily and to stimulate speculation about these two tragic conditions and to further emphasize that what may seem to be a remarkable coincidence may be part of a disease pattern.

CASE REPORT:

R. K. male, age 6, admitted to Saint Mary's Hospital January 25, 1955, for a bone marrow aspiration. A complaint of pallor, spontaneous

bruises occurring over the body, weakness and fussiness for about two weeks was offered.

The boy had been diagnosed as having Mongolism at birth. The delivery was normal, the mother was a forty year old primipara.

Physically the boy was the classical picture of Mongolism. He was very pale. There were ecchymoses scattered over the body. The tonsils were very large, the gums pale but bleeding could be produced by the lightest pressure. The heart rate was about 120. There was a loud systolic murmur over the left sternum. This was interpreted as indicating an interven-tricular defect.

The past history was one of many colds, anemia and convulsive attacks occurring with high fever. He had several kinds of medicines including Tridione, and glutamic acid. A blood count done on June 7, 1949 at age 8 months was as follows:

| | |
|--------------------------|-----------|
| Hemoglobin | 13.9 |
| Red Blood Count | 4,900,000 |
| Stabs | 1 |
| Polymorphonuclears | 51 |
| Eosinophiles | 0 |
| Basophils | 0 |
| Small Lymphocytes | 46 |
| Monocytes | 2 |

The blood count of January 25, 1955 reported the following:

| | |
|--|-------------------|
| Hemoglobin Grams | 7.8 |
| Hemoglobin % | 56% |
| Hematocrit | 23% |
| White Blood Count | 122,000 |
| Lymphocytes | 99% |
| Metagranulocytes | 1 |
| Distintegrated Cells | 54 in 100 counted |
| Platelets | 60,000 |
| Sed. Rate — 15 min. — 17; 45 min. — 60; 60 min. — 74. | |
| Coagulation time — 5½ minutes. | |
| Bleeding time more than 15 minutes. | |

Bone marrow puncture was done by Dr. Louis Hirsch and reported as follows: Bone marrow aspirate unsuccessful insofar as liquid material is concerned. However, cancellous bone is obtained and sectioned. This shows no evidence

of normal hematopoiesis. The marrow spaces are filled with relatively uniform deeply staining cells. Examination of peripheral smear reveals large numbers of blast cells whose origin is not evident.

Diagnosis: Acute leukemia.

The boy was placed on cortisone. This controlled the bleeding. Death occurred February 6, 1955. Autopsy was not done.

The report is made of leukemia occurring in a boy, age 6, who was a victim of Mongolism.

The report is made to add to the literature the number of cases of this double tragedy as recent reports indicate that more than just coincidence may be present. Any new approach on either problem is worthy of further study.

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Arizona Seminars

SOME THOUGHTS ON THE TUBERCULOSIS PROBLEM

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PROBABLY more than any other disease, tuberculosis reflects the social and economic well-being of the community. Repeatedly in the course of human history, tuberculosis has waxed and waned. In England, the mortality from pulmonary diseases seems to have been very high around 1650, then to have decreased slowly for many decades before climbing to a new peak some 200 years later. What amounted to a great epidemic of tuberculosis in the nineteenth century was directly related to the hard living and working conditions prevailing in the cities at the beginning of the industrial revolution. Long and strenuous working days, malnutrition, life among fumes, smoke and dust seem sufficient reasons to explain the ravages of tuberculosis among those newly brought into nineteenth-century factories. Within a few decades, millions of individuals raised on farms and in small towns were uprooted and exposed suddenly to the debilitating effects of inhumane employment. The same conditions generally prevailed everywhere in Europe and North America during the first half century of industrialization.

The association of tuberculosis with rapid industrialization can be observed in some parts of the world today. Large-scale migrations from rural areas to urban districts, disruption of ancestral habits and low standards of living are now found in many parts of Latin America and Asia, and indeed may play some role in the high tuberculosis rates of Arizona. Accompanying these population shifts, tuberculosis is following the same fulminating course that was so frequent in Europe and the United States of America in the 1830's, and the death rates are reaching 200-500 per 100,000 in the newly industrialized areas.

Beginning about 100 years ago, there began in Europe and North America a general decline in the tuberculosis death rates. It is a highly interesting fact that this decrease began long before any specific measures had been instituted for the control of the disease; and, indeed,

before any scientific basis existed upon which to formulate an effective anti-tuberculosis campaign. The germ theory was not accepted in medical circles until about 1880, and the treatment and segregation of patients in sanatoria only began around 1900. When concerted social and medical efforts to control tuberculosis were instituted at the beginning of this century, the annual mortality caused by the disease in America and England had already fallen to 200 per 100,000, about half the figure that prevailed during the height of the epidemic. While the influence of the anti-tuberculosis campaign during the past 50 years has been and remains immense, it would be unwise to overlook the natural forces that, independent of conscious policies, had begun to alter the balance between the tubercule bacillus and man long before the microbiological era.(1)

It is well-known that tuberculosis mortality quickly increases in countries upset by such major social upheavals as war, famine, or economic depressions. During both World War I and II sharp rises in the mortality curves of tuberculosis occurred among the civil populations of all those countries seriously affected by war conditions. With the return of peace, deaths from tuberculosis again declined rather rapidly to pre-war levels. Recent studies tend to confirm the conclusion that where urban living is accompanied by inadequate or slum housing, low income, deleterious effects of overcrowding and poverty, tuberculosis continues to exist at a higher level of prevalence than in other areas of the same city where the general physical and social environment is more favorable.(2) Indeed the course of tuberculosis in the community has consistently fallen or risen in inverse ratio to the standard of living. Sir William Osler was so impressed by this relationship that he is reported to have said that "tuberculosis is a social disease with medical aspects."

One important factor in the downward trend of tuberculosis in the U.S.A. is directly due to

the activity of health agencies. This is in the field of bovine disease. The practical eradication of bovine tuberculosis was accomplished largely by two measures: the pasteurization of milk supplies; and the elimination of tuberculin-positive cows from dairy herds. With the great reduction in bovine tuberculosis, there has been a sharp diminution in all forms of extrapulmonary tuberculosis in children with a consequent reduction in death rates.

In the United States from 1900-1916 the rate of decline in the tuberculosis death rate was about 2 per cent per year; after a brief rise coincident with World War I, the decline continued at an accelerated rate, about 4 per cent per year, until around 1946. With the introduction of the new drug therapy which became available on a large scale in 1947, the picture has markedly changed. In the 7-year period between 1947 and 1953, the tuberculosis death rate in the U.S.A. fell from 33 per 100,000 to 12 per 100,000 or an average annual decline of 9 per cent.(3) Along with the downward trend, the shift in age and sex distribution has been striking. In the first decade of the century, infants under 1 year of age had a higher tuberculosis death rate than any other age group. In recent years this group has had a lower death rate than has any of the adult age groups. There has also been a marked change in the ratio of mortality from tuberculosis between the sexes. In 1900, males in the U.S.A. had about the same mortality rate as females, while at present the male rate is about twice as high as the female. As for differences among racial groups, death rates for non-whites are about three times as high as for the white population.

Although a large proportion of all tuberculosis is reported among the younger part of our population, the actual case rates are higher for the older age groups. The mortality rates are marked by a peak during infancy, followed by the lowest morbidity and mortality of the whole life span from 5-10 or 12 years. A second wave of tuberculosis starts with adolescence and reaches a peak in the 20-29 year group. In females, this is followed by a gradual dip in mortality and final rise during the last three decades of life. In males, the mortality rate continues to rise from 30 years of age until the end of life. No longer in this country is

tuberculosis primarily a disease of young adults, but rather of middle life and in men of old age.(4)

The decline in tuberculosis has not been uniform across the country. There are variations between states and between rural and urban areas. The death rates are generally high in the large cities. Cities of 100,000 and over have a tuberculosis death rate approximately 80 per cent higher than that of the remainder of the country. In fact, when the death rates of each state exclusive of the large cities are studied, there are only 4 states (Arizona, Arkansas, Kentucky, and Tennessee) which have death rates higher than the average rate for the large cities.(5)

In spite of the splendid achievement of lowering the tuberculosis mortality rate in the U.S.A. from 199 per 100,000 to the low national rate of 10.6 per 100,000 in 1954, there are still some 15,000 Americans dying annually from the disease, many of them in the prime of life. Some 500,000 cases are currently known to health departments in the U.S.A., about half of these being in the active stage. In addition, it is estimated that there are some 700,000 unknown cases in this country of which some 150,000 are thought to be active.(6)

Epidemiologists in studying the tuberculosis situation in a given area mainly use 3 yard sticks: (1) mortality rate, usually expressed as the number of deaths a year per 100,000 population; (2) morbidity rate, i. e., number of cases reported a year per 100,000 population; and (3) tuberculin surveys to determine the prevalence of infection. Deaths measure only one aspect of the effect of tuberculosis upon the population. The death rate has never been a precise index of the trend of tuberculosis in the community; and now, due to the effectiveness of the new drugs in the treatment of the disease, its usefulness is more limited than ever. In most civilized countries, deaths are well reported to the authorities, so mortality as an index of trends is still very useful as an indication of the relative effects of tuberculosis on various population groups.

Morbidity rates in this country now offer a good index of the trend of tuberculosis, although even a decade ago reporting of new cases was so inadequate in many places as

to make this measure almost useless. The degree to which physicians report new cases still varies among the states. In 1952, the ratio of cases to deaths varied between states from 2.9 to 10.7. From 1910-1940, the trends of reported morbidity and mortality were essentially parallel, but from 1940-1947, the death rate declined by 27 per cent, while the number of known cases increased in proportion.(7) Fortunately, the tide seems to be turning, and there has been in recent years approximately a 3 per cent decline in the number of new cases reported per year.(5) Tuberculosis case finding and reporting now are definitely superior to that of previous decades. Some 15½ millions of individuals had X-ray examinations of the chest in 1953 in the U.S.A. in case-finding surveys. That was 2 million more than in 1952. Of the total new cases reported in 1953, 32 per cent were first discovered as a result of case-finding X-ray surveys.(8)

In tuberculosis, infection is not synonymous with disease. It has been estimated that while about 50 per cent of the adult American population may have at some time been infected with the tuberculin bacillus, only 3-5 per cent ever develop active disease.(4) Development of tuberculosis in man is a biological struggle between the invasive powers of the agent and the resistance of the individual, modified by a variety of environmental factors. The steadily declining death and sickness rates from tuberculosis in this country indicate that the balance has been in favor of the human host. One can readily see, however, from recent European war experience that the balance is only too easily reversible.

Tuberculin testing of population groups has been done over a considerable period of years on a wide scale; yet differences in materials, dosage, technique, and the failure to persist in continued long-term testing programs have limited the value of the information obtainable from their study. Some observations can be made however. First, there are marked differences in the number of reactors between areas and population groups. In crowded environments having a high tuberculosis death rate, the rise in percentage of reactors with age is faster. And, second, the age-specific prevalence of infection appears to have declined in recent years in many localities. In Mas-

sachusetts, the percentage of positive reactors among grade-school children dropped as follows: 1924 — 28 per cent; 1939 — 14 per cent; and 1955 — 2 per cent.(4) Teague has given the following figures for the percentage of positive reactors among high-school children in Philadelphia: 1929 — 84 per cent; 1939 — 43 per cent; and 1949 — 16 per cent.(9)

Recently a single-dose standardized tuberculin test employing a more refined preparation, Purified Protein Derivative (PPD), has been recommended for general use by the World Health Organization and the National Tuberculosis Association. Using this test, a study was carried out on a large number of U. S. Naval recruits ranging from 17-21 years of age at the San Diego Base.(10) Some of the results of this study are summarized in Table I in which is given the percentage of positive reactors residing in selected states together with the average tuberculosis death rates in the white population of those states for the period 1939-1941 (mid-point of the lives of the men tested).

Examination of this table reveals that states with low tuberculosis death rates also have low percentages of tuberculin reactors in the 17-21 year group. It will also be seen that Arizona has the highest percentage of reactors, as would be expected from its high tuberculosis mortality rates for the period given.

It would appear that in this country exposure to the tubercule bacillus has been decreased and on the whole postponed. In many communities, the results of repeated tuberculin surveys, carefully standardized and well planned, may well be the best yardstick of the tuberculosis problem. For pinpointing special situations where infection rates are still high and where energetic control measures are needed, the tuberculin test is of unquestioned value.

Arizona leads all the states in the severity of the tuberculosis problem. For many years, Arizona has headed the state list of mortality rates and rates for new cases reported. It is reassuring that the death rate from tuberculosis in Arizona has been steadily declining for many years and is now approximately at the point reached by the national rate around 1949.

In Table II, Arizona's tuberculosis death rates are compared with those of the registration area of the U.S.A. for selected years from 1930-

1954. It will be seen that both in Arizona and in the nation at large, there has been a steady decline in these death rates over this 25-year period. From this table, one can appreciate the remarkable decline in total annual tuberculosis deaths in Arizona during this period when the population was growing rapidly. These data point up again the great preponderance of tuberculosis deaths among the males in the white population and among the non-whites in the total population.

In Table III are summarized the tuberculosis deaths among Arizona residents in the 4-year period, 1951-1954, arranged by race, sex, and age. Several points of interest are apparent from these data. Among the white population only 22 or 2.2 per cent of deaths occurred in children under 5 years of age, among non-whites the figures are 81 deaths or 22.5 per cent. This is probably an indication of the intensity of exposure to infection in non-white households. Among white males 531 or 74.6 per cent died at 45 years or over, while only 110 or 47.6 per cent of deaths in females were in these same age groups. As has been reported in the national picture, the Arizona statistics show tuberculosis mortality among white males occurs approximately three times more frequently than in white females. This difference in mortality between the sexes is not marked among the non-white population.

Several explanations are usually given for the high tuberculosis rates in Arizona. Hundreds and perhaps thousands of sufferers from the disease were sent over the years from other states to seek the favorable effects of the arid sunny climate of the southwest. This migration of patients to the state still persists, although perhaps at a lower level than formerly. The introduction of effective drugs in the late 1940's gives more promise for successful therapy at home and will undoubtedly reduce the number of patients seeking the benefits of climate. In 1952-1953, of the 708 individuals reported as dying with tuberculosis in Arizona, 102 or 14.4 per cent were non-residents of the state. In Table IV are summarized the data for tuberculosis deaths occurring among Arizona residents for 1951, 1952, and 1953 by length of residence in the state. (Data given for white population only.) It will be seen that of the total 714 deaths with the data available, 190

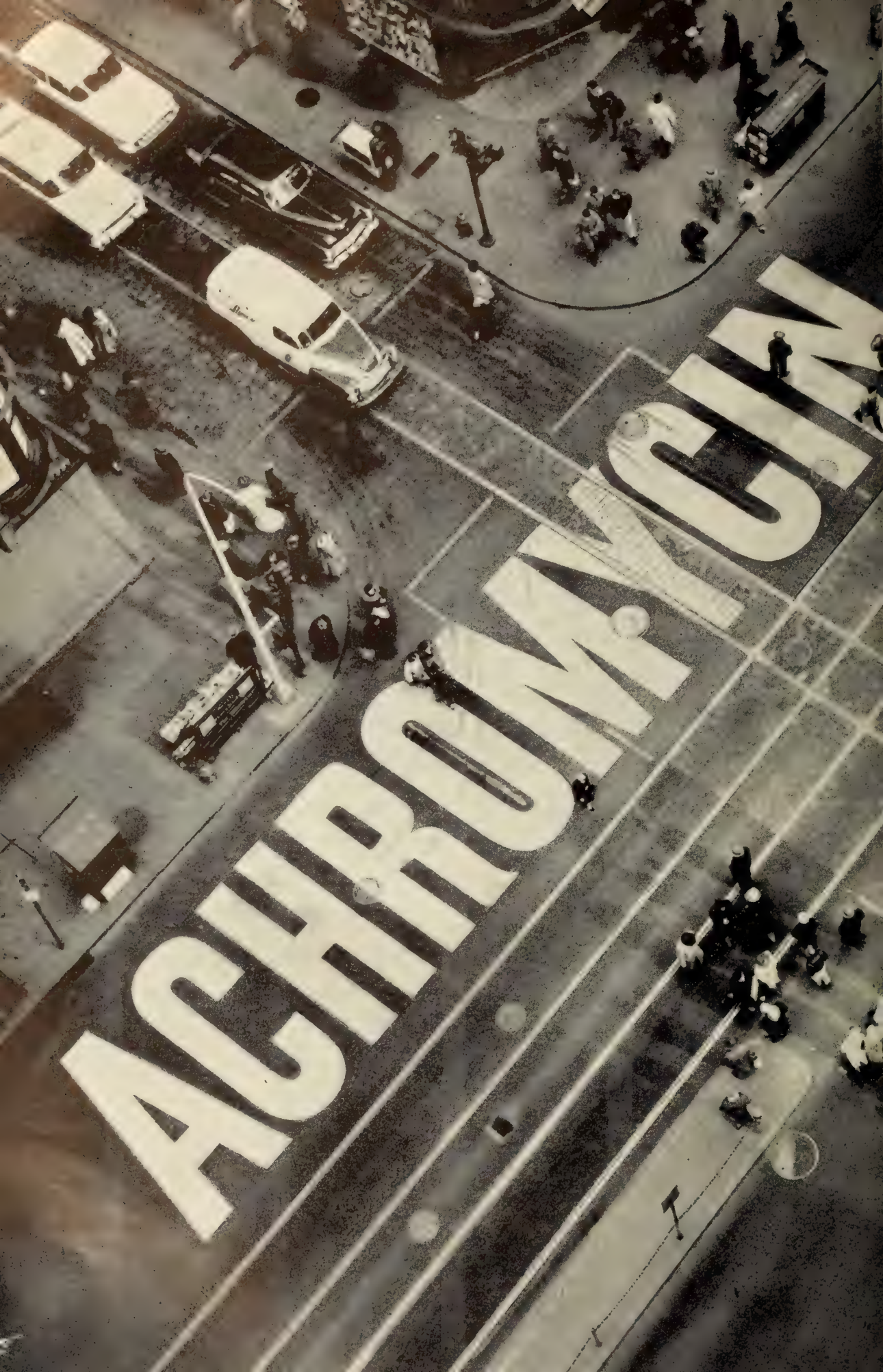
or 26.6 per cent of the individuals had resided in the state for less than 5 years. During that period, only 16 deaths from tuberculosis were reported among children under 5 years of age. This suggests that most of those individuals came to Arizona already suffering with the disease.

Another factor in the high tuberculosis rates in Arizona is the racial composition of the state's population. Through rapid elimination of the more susceptible human strains, races having a long and intimate association with tuberculosis develop a certain amount of racial resistance. Such resistance, developed on the basis of natural selection, is not sufficient to offset unusually unfavorable living conditions, as shown by the heavy toll taken by the disease in India, Egypt, and China. In Table V, the 1950 census figures for Arizona showing the racial composition of the state's population are given.

The great susceptibility of the American Indian to tuberculosis is so well-known that it scarcely requires any further comment. It is worthy of note that of the 1,032 deaths reported from tuberculosis in Arizona for the 3-year period 1951-1953, 252 occurred among Indians. This figure amounts to 23.7 per cent of the total, although the Indian population of the state is less than 10 per cent of the whole.

Another indication of the greater severity of tuberculosis among the Indians is that in 1951 deaths due to tuberculosis represented 11.9 per cent of all Indian fatalities while among the white population tuberculosis caused only 5.3 per cent of the total deaths. In 1953, these figures were 7.2 per cent for the Indians and 3.1 per cent for the whites.

Aronson recently published encouraging data demonstrating a decline in the number of positive reactors over a period of years among the children of Indians on the Pima and Apache Reservations in Arizona.⁽¹²⁾ These data are summarized in Table VI. It will be seen that among children in the 5-9 year age group there has been quite a significant decline in the number of tuberculin positives during the period between the two surveys. This decline is less marked among the 10-14 year group and among the children aged from 15-19 years. It is to be hoped that more favorable economic con-





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¹Posner, A. C., *et al.*; Further Observations on the Use of Tetracycline Hydrochloride in Prophylaxis and Treatment of Obstetric Infections, *Antibiotics Annual* 1954-55, pp. 594-598.



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PHOTO DATA: SPEED GRAPHIC CAMERA,
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TABLE I°
PERCENTAGE OF POSITIVE REACTORS TO TUBERCULIN AMONG U. S. NAVY RECRUITS 17-21 YEARS OF AGE BY STATE OF RESIDENCE TOGETHER WITH AVERAGE ANNUAL TUBERCULOSIS DEATH RATES (WHITE POPULATION ONLY) FOR THE YEARS 1939-1941 (MID-POINT IN THE LIVES OF THE RECRUITS)

| State | Number Tested | Per cent Positive | Tuberculosis Death Rate |
|------------|---------------|-------------------|-------------------------|
| Arizona | 472 | 22.7 | 150 |
| New Mexico | 601 | 18.0 | 72 |
| California | 8,496 | 11.6 | 51 |
| Texas | 6,834 | 8.7 | 55 |
| Colorado | 1,444 | 8.2 | 51 |
| Kansas | 1,900 | 6.2 | 21 |
| Iowa | 2,567 | 4.9 | 16 |
| Utah | 976 | 4.4 | 14 |

°Taken from: Palmer et al, Public Health Reports, 1956, 71, 633-645.

TABLE II°
TUBERCULOSIS DEATHS IN ARIZONA FOR SELECTED YEARS FROM 1930-1954 BY RACE AND SEX TOGETHER WITH TUBERCULOSIS DEATH RATES** FOR ARIZONA AND FOR THE UNITED STATES REGISTRATION AREA FOR THE SAME YEARS

| Year | Arizona | | | | | | | United States # |
|------|------------|---------------------|-------|--------|-----------|--------|------------|-----------------|
| | Estimated | Tuberculosis Deaths | | | | | | |
| | Civilian | Total | White | | Non-White | | TB | TB |
| | Population | Number | Male | Female | Male | Female | Death Rate | Death Rate |
| 1930 | 435,573 | 1,441a | | 978 | | 463 | 330.8 | 74.5 |
| 1940 | 449,261 | 846 | | 622 | | 224 | 188.3 | 45.9 |
| 1945 | 589,221 | 776 | 410 | 170 | 108 | 88 | 131.7 | 39.3 |
| 1950 | 747,000 | 447b | 215 | 82 | 74 | 76 | 59.8 | 21.7 |
| 1951 | 772,000 | 427 | 231 | 74 | 71 | 51 | 55.3 | 19.3 |
| 1952 | 825,000 | 361 | 189 | 62 | 58 | 52 | 43.7 | 15.0 |
| 1953 | 876,000 | 274 | 149 | 48 | 41 | 36 | 31.3 | 11.6 |
| 1954 | 909,000 | 241 | 143 | 47 | 29 | 22 | 26.5 | 10.6 |

°Data from Vital Statistics of the United States, National Office of Vital Statistics and from Arizona State Department of Health Reports.

**Number of deaths per 100,000 of population for the year.

Age specific Death Rates for States in Registration Area.

a Deaths by place of occurrence.

b Deaths by place of residence (1950-1954).

TABLE III°
TUBERCULOSIS DEATHS IN ARIZONA RESIDENTS FOR THE YEARS 1951, 1952, 1953, AND 1954 BY RACE, SEX, AND AGE

| Age Groups by Years | Tuberculosis Deaths | | | | | |
|---------------------|---------------------|------|--------|-----------|------|--------|
| | White | | | Non-White | | |
| | Total | Male | Female | Total | Male | Female |
| Under 1 year | 4 | 3 | 1 | 29 | 16 | 13 |
| 1 - 4 | 17 | 9 | 8 | 52 | 25 | 27 |
| 5 - 14 | 5 | 3 | 2 | 23 | 12 | 11 |
| 15 - 24 | 27 | 12 | 15 | 59 | 27 | 32 |
| 25 - 34 | 102 | 60 | 42 | 50 | 25 | 25 |
| 35 - 44 | 147 | 94 | 53 | 37 | 17 | 20 |
| 45 - 54 | 223 | 172 | 51 | 33 | 21 | 12 |
| 55 - 64 | 227 | 202 | 25 | 21 | 16 | 5 |
| 65 - 74 | 128 | 106 | 22 | 26 | 18 | 8 |
| 75 and over | 61 | 50 | 11 | 29 | 21 | 8 |
| Unknown | 2 | 1 | 1 | 1 | 1 | 0 |
| Totals | 943 | 712 | 231 | 360 | 199 | 161 |

°Data from National Office of Vital Statistics, Washington, D. C., and from the Annual Reports of the Arizona State Department of Health.

ditions and the recent move to supply better educational and medical facilities to the Indian population will serve to speed up this decline in their tuberculosis infection rates.

In the 1940 and 1950 census reports persons of Mexican birth or ancestry, who were not definitely Indian or of another non-white race, were classified as white. It is not easy, therefore, to get recent figures on the susceptibility of that group to tuberculosis in Arizona. In 1946, however, 15.3 per cent of all tuberculosis deaths in the state were reported among the Mexican element of the population. This would indicate a high degree of susceptibility, which is not surprising as many of the Mexican people

coming to this state are from rural areas where there is likely to be a lower incidence of tuberculosis than in the towns of Arizona.

It is also well-known that the American Negro is highly susceptible to tuberculosis. Although only 3.5 per cent of Arizona's population according to the 1950 census is classified as Negro, indications are that this group has a disproportionately high tuberculosis rate. Fortunately, the decline in deaths and illness from tuberculosis among the white population is being fully shared by the non-whites.

Possibly there are other less apparent reasons why Arizona's tuberculosis rates are high. Cer-

TABLE IV*
TUBERCULOSIS DEATHS ACCORDING TO LENGTH OF RESIDENCE IN ARIZONA (WHITE RESIDENTS ONLY) — 1951, 1952 AND 1953

| Total Tuberculosis Deaths | Length of Residence in Arizona | | | | | Not Reported |
|---------------------------------|--------------------------------|----------------|----------------|----------------------|------|-----------------|
| | Less than 1 year | 1 - 4 years | 5 - 9 years | 10 years and over | Life | |
| 751 | 42 | 148 | 155 | 297 | 72 | 37 |

*Data for this Table derived from Statistical Supplements to Annual Reports of the Arizona State Department of Health.

TABLE V*
ARIZONA — 1950 CENSUS OF POPULATION

| Population | Total | White | | Indian | Negro | Other*** |
|--------------------------|---------|----------------|-------------------|--------|--------|----------|
| | | Native Born | Foreign** Born | | | |
| Percentage of State's | | | | | | |
| Total | 100 | 81.2 | 6.1 | 8.8 | 3.5 | 0.5 |
| Actual | | | | | | |
| Count | 749,587 | 608,917 | 45,594 | 65,761 | 25,974 | 3,341 |

*Data taken from U. S. Census of Population: 1950 Bureau of the Census.

**Of the foreign-born white population, 24,917 were born in Mexico.

***Mostly Chinese and Japanese.

TABLE VI*
PERCENTAGE OF POSITIVE REACTORS TO TUBERCULIN (P. P. D.) AMONG INDIAN CHILDREN ON RESERVATIONS IN ARIZONA IN TWO SURVEYS

| Reservation and Tribe | Age Group by Years | Date of Survey | | |
|----------------------------|-----------------------|----------------|-------------|------|
| | | 1936 - 1937 | 1940 - 1941 | 1954 |
| Pima | 5 - 9 | 23.4 | | 7.9 |
| Apache - San Carlos | | | 29.3 | 8.3 |
| Apache - Fort Apache | | | 49.2 | 19.5 |
| Pima | 10 - 14 | 46.2 | | 43.2 |
| Apache - San Carlos | | | 53.4 | 40.8 |
| Apache - Fort Apache | | | 78.0 | 53.7 |
| Pima | 15 - 19 | 78.2 | | 70.9 |
| Apache - San Carlos | | | 79.9 | 69.6 |
| Apache - Fort Apache | | | 94.8 | 83.4 |

*Data taken from Aronson and Taylor, Amer. Review of Tuberculosis, 1955, 72, 35 - 52.

tainly social and economic factors are important. As Winslow so wisely stated in a recent editorial, "The tubercle bacillus is not the cause of tuberculosis. It is a cause of the disease."⁽¹¹⁾ More study must be given to determine the possible significance of the other factors in Arizona.

In contrast to the falling mortality rates for tuberculosis in Arizona, there has been no comparable decline in the number of new cases being reported each year. This is partly explained by a greater interest on the part of physicians in reporting their cases to the health department, but is more likely due to the increased efficiency in case-finding measures. It is possible, too, that patients with tuberculosis are less reluctant to seek medical care, now that effective drugs for treating the disease are available. At any rate, the continued high incidence of active cases in the population indicates that the tuberculosis problem is still of major importance to the community.

CONTROL MEASURES

Perhaps the most effective way of reducing the incidence of tuberculosis in the community is the general improvement in the economic and social welfare of the people. This, of course, is most difficult and is not directly the responsibility of the physician or the health officer. Efforts can be made to eliminate substandard housing with its attendant ill-effects. Attention to improvement of nutrition through health education and through school lunch programs may also prove highly beneficial in promoting disease resistance among children.

Specific measures aimed at the control of tuberculosis should be directed toward early diagnosis, adequate treatment, prevention of spread of infection, enhancement of resistance, rehabilitation of patients, and education of the public as to the natural history and dangers of the disease.⁽¹³⁾

Private physicians have an important part to play in the early diagnosis of the disease, in the education of the patient, in the medical care of patients, and in reporting the cases promptly. It is the duty of the attending physician to persuade the patient to undergo prompt and adequate treatment and to ascertain that household and other intimate contacts of the patient are brought in for X-ray examination

of the chest.

Under the treatment regimes made possible by the newer drugs, patients are often released from the hospital for continued care in the home. The responsibility of the physician in such cases is to guard against relapse. In the U.S.A., relapses are reported in about 115,000 cases per year. An increase in the number of these relapses began about 1948 shortly after the beginning of the chemotherapeutic era.⁽¹⁴⁾ It would appear that many "incomplete cures" have resulted from inexpert handling of the new drugs. Patients with active disease treated by trained sanatorium physicians generally do well. Those inadequately treated outside of sanatoria may develop chronic disease due to "drug resistant" bacilli.

The health officer has the chief responsibility for tuberculosis control in the community. In addition to maintaining an accurate up-to-date record of all cases in his area of jurisdiction, he must assist the private physician in arranging for the examination of all family contacts and in keeping patients under proper medical supervision. Periodic examination of sputum from all patients suspected of having active tuberculosis is highly important to determine whether isolation is needed. The public health laboratory should render expert assistance to physicians and clinics in the examination of sputum by smear, culture, or animal inoculation.

More and more as the prevalence of tuberculosis decreases in the community, the employment of the epidemiological skills of health officers will be required to uncover sources of infection of individual new cases. In many communities cases of tuberculosis are becoming infrequent, so that the disease exists in relatively small household, neighborhood, or occupational epidemics. The contracts of every new case in such areas will have to be investigated with the same care as would be given to a case of smallpox or diphtheria.

Since tuberculosis is especially prevalent among the indigent and medically indigent, many patients are unable to pay for private medical care. It is the duty of the health department to provide clinic facilities at convenient times and places to supply diagnostic and treatment facilities for this important segment of the population. The fact that treat-

ment can now be given in the home and in the hospital has lightened the load of the institutions, but almost correspondingly increased that of clinics. Public clinics instead of being largely limited as in the past to diagnosis of suspects or follow up of discharged hospital cases, now often have a heavy load of patients under drug therapy. New York City Department of Health clinics had 4,412 such patients at the end of 1955; in fact, a greater number than the 3,568 patients in the institutions of the Department of Hospitals. Likewise, the Chicago Municipal Sanatorium had more patients at the end of last year under drug therapy in their clinics than in the hospital services.(15) Home-care programs are particularly important for the treatment of newly discovered cases faced with long waiting periods for hospitalization, as well as for the continuation of care for those discharged from sanatoria.

It will be readily appreciated that in such a medical-care program the welfare department must play an important role. In addition to determination of ability to pay for necessary care, the welfare department must determine and furnish reasonable assistance to provide for the support of the patient's dependents during the period he is unable to work.

Voluntary agencies, particularly the local Tuberculosis and Health Association, also fulfill an important function in the anti-tuberculosis campaign. The especial role of this organization is education of the public about protection against tuberculosis and cooperation with the medical society and the health department in the elaboration of a satisfactory community program.

As already indicated, the success of the new anti-tuberculosis drugs has markedly altered the picture in a favorable direction. Some of the immediate practical benefits may be listed as follows: 1. A great reduction in toxic symptoms and a corresponding improvement in well-being and morale of the patient. 2. A decreasing necessity for prolonged rest in bed. 3. Rapid preparation for necessary surgery and a great reduction in surgical risk. 4. A rapid decrease in cough and expectoration and conversion of sputum from positive to negative. 5. The prevention or cure of lethal forms of the disease in infancy and early childhood. 6. A reduction

in the number of spreaders of infection by the cure of early tuberculosis before it becomes advanced disease.(14) It will be appreciated that these effects are of considerable public health importance.

Probably the most effective method for the discovery of new cases of tuberculosis in the community is the mass X-ray survey. To be done properly, these surveys must be preceded by an educational campaign, and followed by careful, competent, and long-continued observation of those cases discovered. Every effort should be made to examine population groups in which there is reason to suspect a high incidence of tuberculosis, especially males in the older age groups. Industrial workers, pregnant women, relief recipients, and inmates of institutions ought to be examined. Routine X-raying of all persons admitted to general hospitals for any cause has also been shown to reveal many unsuspected cases of tuberculosis. Among younger age groups in the population, it is frankly wasteful nowadays to examine them by X-ray without prior tuberculin testing to eliminate the large number not even infected.

By 1945, a case-finding program using a mobile photofluographic X-ray unit has been initiated by the Arizona State Department of Health. Up to the present, something over 700,000 chest X-ray examinations have been made in this state. The most impressive survey was carried out in Maricopa County in 1951 with the cooperation of a team from the U. S. Public Health Service. In the course of this survey, chest X-ray examinations with small films were done on 164,445 residents of Maricopa County. Of this number, 9,080 were classified as tuberculosis suspects. Of those who returned for large X-ray films of the chest and other diagnostic studies, 3,065 were finally classified as tuberculosis. From this number, 201 active tuberculosis cases which never before had been diagnosed were notified to the health authorities. In addition to this valuable result, this survey gave a strong indication of the grave nature of the tuberculosis problem in Maricopa County.(16)

To determine the progress being made in the control program, all available measuring methods should be utilized efficiently; i. e., (1) more complete and more accurate reporting of cases and deaths from tuberculosis, (2) the

setting up of long-continued, standardized tuberculin testing surveys in selected areas of the state to determine the extent to which infection levels are changing among the younger age groups of the population, and (3) the increased use of mass X-ray surveys to uncover previously unknown latent and active cases.

To provide treatment for active cases, the community must have available an adequate number of beds in institutions equipped and staffed to render a good quality of medical services. In general, the tuberculosis sanatorium serves three functions: as an isolation hospital; a treatment center; and a training school, where the patient is taught how to get well, how to remain well, and how to protect others from his disease.

In 1952, the Division of Hospital Facilities of the U. S. Public Health Service estimated that to meet the standards set up under the Hospital Survey and Construction Act (Hill-Burton Act) (i. e., 2.5 beds times the average annual number of tuberculosis deaths over the most recent 5-year period), an addition of 872 new beds for tuberculosis patients would be required in Arizona. At present, due to falling death rates, this number would no doubt be considerably smaller, but the need for new hospital facilities is still urgent. To help alleviate the shortage of beds, more consideration should be given to increasing the number of beds for tuberculous patients in general hospitals.

Rehabilitation of the patient so that he may resume useful employment is assuming an ever-increasing importance in the management of the tuberculosis problem. Often assistance is required for the patient in finding an occupation which he can safely pursue when he has recovered. Such aid may be crucial in preventing a serious relapse of his tuberculosis.

In 1955, the Arizona Legislature passed a Tuberculosis Control Act which is intended to strengthen the health departments in hastening the downward trend of that disease in this state. While this Act is not all that might be desired, it should assist materially in securing proper treatment for many patients who otherwise might have remained a dangerous source of infection in the household and to the community. Actually under the provisions of the

law, the local boards of health through the board of supervisors of the county shall be responsible for securing care and treatment for tuberculosis persons in an institution or at home. The Act provides funds (\$325,000) to the State Department of Health to reimburse the counties for a part of the cost incurred in accomplishing this. An additional amount (\$75,000) has been appropriated for the State Department of Welfare to provide adequate support for the dependents of indigent persons who may be hospitalized under provisions of the Act and to provide drugs or other required items for individuals who have been approved for home care.

Even a cursory examination of this program for tuberculosis control will make evident that a goodly staff of well-trained public health nurses and social workers, as well as other auxiliary personnel, will be required for its successful implementation. Unfortunately, Arizona is still lagging behind in public health facilities and in trained health personnel. Until these deficiencies are to some extent corrected, progress in the fight against tuberculosis is likely to be less satisfactory than need be.

SUMMARY

There has been a steady decline in the toll of tuberculosis among the American population for many decades. This decrease, especially in the tuberculosis death rate, is proceeding much more rapidly in recent years. Unfortunately, the number of new cases reported each year has not fallen at the same rate.

Tuberculosis deaths among females have decreased at a more rapid rate than among males, so that the tuberculosis death rates for males are from 2.5 to 3.0 times those for females. There is also a marked difference in the mortality rates by age groups, for females the peak being among the 20-29 year group, and for males the rate continues to rise from age 30 years until the end of life. Tuberculosis also takes a far heavier toll among the non-white segment of the population than in the white.

The importance of social and economic factors in influencing the trend of tuberculosis in the community is discussed. It appears quite likely that the general improvement in living standards, working conditions, and in nutrition in this country during the past century has been of

great importance in accounting for the marked decline in tuberculosis.

Some factors responsible for Arizona's high tuberculosis rates are set forth. Figures are given to show that both the white and non-white segments of Arizona's population are sharing in the general improvement of the national tuberculosis picture. Arizona's tuberculosis death rate is now about equal to that for the nation in 1949.

General and specific measures for the control of tuberculosis are outlined. Arizona's deficiency in public health facilities and personnel needed for the rapid control of tuberculosis is pointed out.

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PHOENIX *Clinical* CLUB

The Case History in this discussion is selected from the Case Records of the Massachusetts General Hospital, and reprinted from the New England Journal of Medicine. The discussant under Differential Diagnosis is a member of the staff of the Massachusetts General Hospital. The other discussants are members of the Phoenix Clinical Club.

MASSACHUSETTS GENERAL HOSPITAL

A FIFTEEN-year-old-girl was admitted to the hospital because of "fainting spells."

The patient had been in good health until she was about five years of age, when a diagnosis of rheumatic fever was made. She was hospitalized for a year and examined annually thereafter, without evidence of recurrence or the development of murmurs. She entered school at the age of seven, and in the next few years cyanosis of the lips and nail beds gradually developed. Although she was moderately active during this time she became short of breath, tired easily and was unable to keep up with the activities of her playmates. Five years before admission she experienced her first syncopal attack, which occurred while she was recuperating from an appendectomy, and was asked by a nurse to sit up. She had suffered similar attacks about every two or three months since then, and these seemed to be related to over-exertion and emotional upsets such as arguments with the family. They also came on when she "read too long", and were usually followed by a throbbing headache, chiefly over the vertex, that was relieved by lying down or sleeping. Six months before entry the family moved to another state, and the patient had considerable difficulty adjusting herself to the new surroundings, particularly to her school work. Since that time she had experienced increasing exertional dyspnea accompanied by cyanosis, frequent headaches and weakness in the legs. Fainting spells now occurred about once each day. She became dyspneic on climbing only a few stairs, and fainted when walking up two flights. Three weeks before examination her mother was hospitalized for a major operation, and during this time the patient had only one fainting spell.

There was no history of orthopnea, paroxysmal nocturnal dyspnea or peripheral edema. During the two months before admission she had lost ten pounds in weight.

Physical examination showed a well developed girl in no distress. There was cyanosis of the face, lips and nail beds, and clubbing of the fingers. The eyes were normal. The lungs were clear. The point of maximum impulse of the heart was felt in the midclavicular line. There were no thrills. The pulmonic second sound was very loud and inconstantly split, and its impulse was easily palpable. There were two heart sounds in systole in the pulmonary area. No murmurs were heard. The rest of the examination was negative.

The temperature was 99°F., the pulse 100, and the respirations 20. The blood pressure was 105 systolic, 80 diastolic, in the right arm, 110 systolic, 75 diastolic, in the left arm and 120 systolic, ? diastolic, in the right leg.

Examination of the blood revealed a hemoglobin of 17.7 gm. per 100 cc. and a white-cell count of 11,900, with a normal differential. The hematocrit was 61.5 per cent. In a roentgenogram of the chest the heart was not enlarged, but the main pulmonary artery appeared prominent. The right ventricle appeared to be slightly enlarged on a lateral view. The lungs were normal. An electrocardiogram disclosed a sinus arrhythmia at a rate of 65 per minute and right-axis deviation. The PR interval was 0.14 second, and the QRS interval 0.08 second. The P waves appeared normal. There was a small Q wave with tall R waves and inverted T waves in Lead V₁. The R waves were prominent in Lead V₂. On the fifth hospital day an arm-to-tongue circulation-time determination was carried out; 1 cc. of Decholin was injected on two occasions, one minute apart. A good end point was achieved each time at seven and eight seconds respectively. About five or ten minutes after the injection the patient became markedly dyspneic and restless, and more cyanotic than usual. A short while later she became unresponsive and had a brief generalized tonic-clonic convulsion, followed by a period of apnea. The pulse was 70 per minute, and the blood pressure 180 systolic, 120 diastolic. Respirations were restored for a short time after artificial respirations but soon failed, along with the pulse. Intravenous administration of calcium chloride, intravenous and intracardiac administration of epinephrine, cardiac massage and electrocardiac stimulation were to

no avail, and the patient was pronounced dead about forty-five minutes after the onset of the acute episode.

DR. PALMER DYSART

Paroxysmal dyspnea, syncope, weakness, cyanosis and clubbing of the fingers occurring in a young girl are sufficient to make a diagnosis of congenital heart disease. To further corroborate this, a marked polycythemia was present. There was hypertrophy of the right ventricle, shown by x-ray which produced a right axis deviation on EKG and there was also prominence of the pulmonary artery, and the abnormally loud pulmonic second sound which was inconstantly split were evidence of increased pulmonary arterial pressure.

Cyanosis and the absence of an audible murmur would seem to rule out several of the most common of congenital heart lesions. Patent ductus arteriosus, with its characteristic machine-like murmur, is an example. This lesion, although considered to be common, is actually comparatively rare as a solitary lesion, for about two thirds of such defects are associated with other congenital cardiac lesions. So, although patent ductus arteriosus, per se, is not classed with the cyanosis producing lesions, it can be associated with those which are.

Due to the absence of a murmur and cyanosis, it was not recognized that a congenital heart lesion was present, when at the age of five, this child was hospitalized for a year with what was diagnosed as rheumatic fever. The basis for this diagnosis is not known, but it is probable that evidence of arthritis was present. The newer testing tools, such as antistreptolysin-O and C-reactive protein were undeveloped then, and it is possible, if ten years before the death of this child placed the episode of rheumatic fever at, or soon after 1945 when penicillin became available, that this antibiotic may have been used, for it was tried extensively as a treatment for rheumatic fever. If such was the case, it may have been indeed fortunate, for penicillin has succeeded in curing bacterial endocarditis, and it is possible that this was the infectious process suffered by this youngster at the age of five, since it is a very common complicating condition in all congenital heart lesions, death being due directly to bacterial endocarditis in 40% of such cases. However, in one condition, interatrial septal defect, a superimposed rheumatic infection is a fre-

quent complication and bacterial endocarditis is rare.

It was several years after this rheumatic fever that the gradual development of cyanosis and dyspnea upon exertion developed, and in the absence of evidence of valvular lesions to substantiate the diagnosis of a progressive rheumatic heart disease, it is evident that this episode complicated and aggravated a pre-existing condition, which, until that time, was not evident. This chain of events would indicate that the congenital heart disease which then became apparent would fall into the class of Transient or Delayed Cyanosis. In this category, an arterial-venous shunt is present, but there is no cyanosis unless circumstances arise which raise the pressure in the right side of the heart, when transient or terminal reversal of flow occurs, with venous blood entering the arterial stream. Included in this group are patent ductus arteriosus, defect of the aortic septum, defect of the auricular septum, patent foramen ovale, and defect of the ventricular septum. Defects of the atrial or ventricular septa are usually associated with pulmonary stenosis, or with defects in the other septum, or all three, or a combination of these with patent ductus arteriosus. Single lesions are rare, occurring in approximately only one-tenth of the cases. A patent foramen ovale, unless quite large or associated with other abnormalities is seldom of any clinical significance, with one exception that is noted, which is that this condition is more frequently associated with embolism than with endocarditis as the cause of death.

Lesions which do not result in the mixing of venous with peripheral arterial blood such as coarctation of the aorta and stenosis of the pulmonary artery are not placed in the Cyanotic Group, but here it is a question of degree, and whether there are coincidental anomalies which do permit such mixing. A lesion which permits flow of arterial blood into the pulmonic circulation does not of itself produce cyanosis, but, by overloading the pulmonary circulation, can produce right heart failure.

Frequent combinations of defects are classified as entities such as Tetralogy of Fallot, Lutembacher's syndrome, and Eisenmenger's Complex. Without careful and intensive circulation studies with cardiac catheterization and other methods, it is impossible to evaluate the lesions of congenital heart disease. Such studies

were just begun, with arm-to-tongue circulation tests with Decholin when this patient collapsed and died. The circulation times of these two tests were seven and eight seconds. The normal range for the Decholin test is 8 to 14 seconds with an average time of 10 seconds, so the tests would indicate a venous-arterial shunt. These include defects in atrial, inter-ventricular and aortic septa.

Shunts with a high pressure differential such as ventricular and aortic septal defects are noted for the loud systolic and sometimes, diastolic murmurs. Since no murmur was noted, it seems more probable that an atrial septal defect or patent foramen ovale was present, which, because of the lower pressure differential, could be expected to be less certain of being accompanied by an audible murmur. However, in other anomalies such as Eisenmenger's Complex, in which there is a high inter-ventricular septal defect and a shift of the aorta to the right, although diastolic murmurs may be heard at the apex, and pulmonic areas, they are not necessarily present. Another condition in which murmurs may be absent, consists of anomalous pulmonary veins opening into the right auricle, coronary sinus or venae cavae accompanied by a patent foramen ovale. Symptoms may be mild and intermittent in this condition. Uncomplicated inter-ventricular septal defect (*Maladie de Roger*) also tends to run a symptomless course without cyanosis and with a systolic thrill in one-third of the cases.

Explanation of the mechanism of the production of heart sounds is an intriguing subject, and involves study of the physical properties of matter, the vibrating object, the transmitting medium, standing waves, traveling waves, enforcement, interference, resonance, phase, frequency, pitch, volume, loudness, quality, receptor response, physiology of hearing including Fletcher-Munson Effect, etc. — one topic leading on to another.

Rouanet made the distinction between heart sounds which has become ineradicably custom sanctioned, distinguishing the sound of valve closure at the beginning and end of systole as a heart or arterial tone as opposed to a murmur, a differentiation which is entirely unjustified in a purely physical sense, since both are the result of irregular sonorous vibrations and that of a murmur being more rhythmic upon sound analysis than the mis-named heart

tones. Both types of heart sounds are produced by vibrations of the muscular or membranous structures, not by their fluid contents, the difference being in the suddenness of onset and ending of the tone as compared to the gradual beginning and uncertain termination of the murmur.

Timing, pitch, loudness and quality of the various heart sounds depend then upon distance from the listening point, structure of the related parts of the heart and great vessels, differential pressures between chambers, and between chambers and vessels. Abnormalities in structure, both anatomically and pathologically result in alteration of customarily experienced sounds, as noted with a split second sound which is produced by asynchronous aortic and pulmonic closure. While not quite synchronous, these are separated, normally, by two short a time interval to be auditorially appreciable as separate sounds, but, when pathologically, the normal differences are exaggerated, a split second sound is noted, a condition which is more readily appreciable if the first element is the weaker of the two. This last point explains why a split second sound is noted more often in increased pulmonary arterial pressure than in peripheral arterial hypertension, for the weaker first element due to pulmonic valve closure is more readily heard than it is as a second element, when it is overshadowed by the louder first element of aortic valve closure. The pulmonic second sound is normally louder up to 25 or 30 years of age, and this is noted in 90% of all children under 10 years of age, and in about 10% of these, a splitting of the second sound can be recognized.

Until recent years, congenital lesions of the heart, which, according to 1925 statistics comprised from 0.7 to 2% of all cases of organic heart disease, were of pathological interest only. The duration of life and the disability produced depended upon the type and degree of abnormality and its effect upon the circulation. However, with the development of new techniques permitting surgical repair, practical interest and case finding has developed so that by 1950 to 1953 the reported incidence had risen to 7 to 8%. By 1940, the only defect which had been corrected surgically with any success was patent ductus arteriosus, by ligation. Then, anastomotic procedures were developed to be followed by intra-cardiac defect repair under

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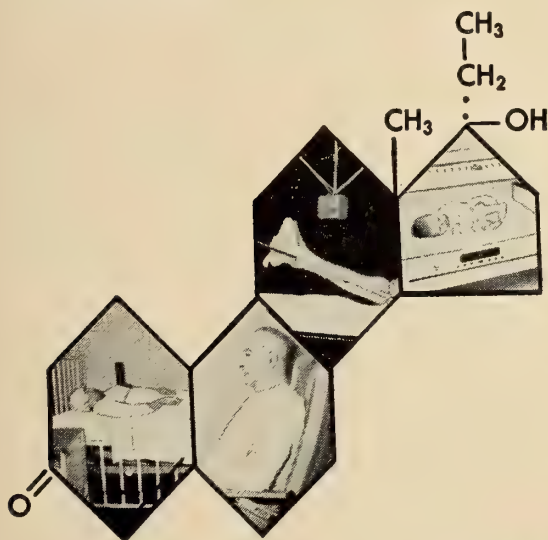
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direct vision under hypothermia with cross-circulation and then biological and artificial oxygenators. It is anticipated that techniques will be developed which will allow the patient's own pulmonary vessels to be cannulated and their own lungs used as oxygenators. As a result of these advances, medical literature is accumulating enlarging series of successful surgical correction of anomalies hitherto considered to be hopeless. As evidence of this, it is interesting to note that last September at a Symposium on Arteriosclerosis, the University of Minnesota Medical School reported a series of 77 direct vision intra-cardiac operations, and by December, according to their latest report, this number has been raised to 101.

Experience is being gained not only in surgical techniques, but in the ancillary services. For example, prevention of ventricular fibrillation during hypothermia was aided by adding 5% carbon dioxide to oxygen preventing respiratory alkalosis. Neostigmine intravenously and infiltration of the S-A node with xylocaine also provided protection against ventricular fibrillation.

To assist in the evaluation of surgical risk, it has been noted that the mortality rate was 7% with pulmonary artery pressures 70% or less of systemic, and about 55% if the pulmonary artery pressures were above 70% of systemic arterial pressure. Earlier operations are advisable.

The dismaying collapse and death of this patient following the Decholin arm-to-tongue circulation time tests would seem to indicate the possibility of a direct relationship to the Decholin which was used. A possible anaphylactic or toxic reaction was considered, but investigation of this drug seems to eliminate it as a direct cause of this patient's death.

Decholin is dehydrocholic acid and is an oxidation product of cholic acid derived from natural bile acids and occurs as a fine, colorless, crystalline powder of bitter taste, slightly soluble in glacial acetic acid and alcohol. Decholin-sodium is the sodium salt of dehydrocholic acid, and is soluble in alcohol and water, forming a slightly alkaline solution used for intravenous injection.

Bile contains two characteristic salts — sodium glycocholate and sodium taurocholate. When the acids of these salts are hydrolyzed, they yield respectively, glycocholate and taurine, and common to both, sodium cholate. Glycocholate

is found chiefly in the bile of herbivorous animals, and taurocholate in carnivorous; in human bile, there is a mixture of the two.

Decholin is a rapidly effective cholagogue and choleretic, relatively non-toxic, and in therapeutic doses, neither affects the cardiovascular, nervous, nor hematopoietic systems. When straight bile is introduced into the circulation, it has a depressant effect upon the heart muscle, leading to a reduction in blood pressure and slowing of the pulse, but intravenous injection of Decholin sodium in therapeutic dosage, which is three to ten times the dose used in measuring the arm-to-tongue circulation time, has no such effect upon the cardiovascular system, but is followed in 15 to 20 minutes by a profuse flow of bile lasting one to one and one-half hours, effecting excretion of bilirubin, cholesterol, pigment, and effects diuresis in hepatic engorgement with edema. Compared with bile constituents its toxicity is 1/10 that of sodium taurocholate, 1/13 of sodium glycocholate, and 1/22 of sodium cholate. Its only contra-indication is complete biliary obstruction.

Decholin circulation-time tests have been without undesirable side effects, so it logically follows that the collapse of this patient was due to another cause coincidental with this test, but not due to it. This patient has had many attacks of syncope related to over exertion and emotional upsets, but this was not just a fainting spell — the pulse was slow and the blood pressure elevated, at least for a time before failure of respiration and heart beat. From this, it does not appear that this catastrophe was cardiac; nor would pulmonary embolism fit this pattern for shock is inevitable. With the tonic and clonic convulsion, this is the picture of cerebral embolism.

When doubt assails me, and the next step appears more hazardous, and my convictions waver, I can get comfort from the words of Giovanni, Battista Morgagni, who in 1761, when he was eighty years of age, published his famous *De Sedibus et Causis Morborum*, a book which founded the science of pathological anatomy. In this Morgagni remarks, "Those who have dissected or inspected many bodies, have at least learned to doubt; when others, who are ignorant of anatomy and do not take the trouble to attend to it, are in no doubt at all." So, even though I may have doubted

and would temporize and consider other possibilities before summing up, the path I have followed, though it may have been devious at times, has led me to the conclusion that this child had a congenital heart lesion which consisted of an inter-atrial septal defect or large patent foramen ovale with a superimposed rheumatic infection which resulted in atrial thrombus formation and death resulted from paradoxical embolism to the brain.

DIFFERENTIAL DIAGNOSIS

Dr. David Littman: This girl of fifteen was admitted to the hospital for fainting spells and cyanosis. At the age of five she had had rheumatic fever, which must have been severe because she was kept in the hospital for a year. It would be helpful to know exactly what occurred at that time. In any event, this patient, who should have had heart murmurs, apparently never had them. Even though she was followed by frequent intervals thereafter by any number of competent observers no murmurs were ever heard. Other details I should like to know are whether she was cyanotic at birth and the state of her mother's health during the pregnancy. In any event, at some time after beginning school at about the age of seven, she began to be cyanotic, to tire easily and to be unable to keep up with the other children — an indication that she was encroaching upon a limited cardiac reserve.

At the age of ten she began to have syncope. Syncope occurs as a manifestation of heart disease most often in Adams-Stokes disease, in complete heart block with fluctuations of rhythm, occasionally in paroxysmal arrhythmias with unusually rapid rates, in coronary-artery disease, rarely with angina, in aortic stenosis and in cor pulmonale. It especially occurs in heart disease secondary to lung disease; I can recall having several such patients whose primary complaint was fainting. I might add that no one knows why these people faint. Some of these patients also have angina pectoris or something much like angina. I have observed a man with Eisenmenger's complex who had fainting spells. In this particular case there was some question about epilepsy as well. When we saw the patient during such an attack he had ventricular tachycardia. Some patients with congenital heart disease are prone to paroxysmal arrhythmias, which in some cases is sufficient to produce syncope. It is interesting that during

the terminal episode which was apparently not too unlike the previous attacks, the patient had a pulse of 70. Whether the pulse was regular or not is not mentioned. The assumption is that it was. It is interesting that she had the attacks commonly with overeffort and could produce them regularly by walking up two flights of stairs. This too is characteristic of the fainting spells that occur with cor pulmonale.

I do not know how to fit in the throbbing headaches and do not know that they contribute anything.

The physical examination was very interesting. The patient was cyanotic, and had clubbing of the fingers. I wish we had been informed whether there was any discrepancy between the degree of the cyanosis and the degree of the clubbing. The greatest obstacle in arriving at a diagnosis in this case is the absence of thrills and murmurs. There were two heart sounds or at least a split second sound, which was loud and could be felt over the pulmonary area. This suggests that the pressure in the pulmonary artery was very high. The two heart sounds in systole in the pulmonic area are troublesome. Nothing in the pulmonary valve produces first sounds; they are produced by the mitral and tricuspid valves and should be heard best over the lower part of the heart. I should have expected, with two first sounds and two second sounds, a bundle-branch block on the electrocardiogram; that was not observed, but the patient did have the pattern of hypertrophy of the right ventricle.

Dr. William R. Owen: I think everybody agreed that she had cyanosis and clubbing. In the pulmonary area I heard a systolic murmur, and a loud palpable pulmonic second sound was apparent. I estimated the murmur as only Grade 1 or 2.

Dr. Allen M. Butler: I wonder if Dr. Nadas can tell us more about these murmurs.

Dr. Alexander Nadas: I think we called the systolic murmur Grade 2 in the pulmonary area. I do not recall the other sound heard in systole. The cyanosis and clubbing were both definite; I should call them two plus or three plus.

Dr. Howard B. Sprague: Such an additional systolic sound might be related to the pulmonic and aortic valves since in opening they contribute to the first heart sound. Dr. Nadas has suggested, in valvular pulmonic stenosis,

that the accentuation of the third component of the first heart sound is due to the "slapping-sail" effect of the pulmonic valve as it attempts to open.

Dr. Littmann: May I see the x-ray films, Dr. Gibbons?

Dr. John F. Gibbons: There is a definite enlargement of the pulmonary-artery segment of the cardiac silhouette and also, in the lateral view, enlargement anteriorly of the right ventricle. The other cardiac chambers, as far as I can tell from these films, are all of normal size. The lung fields are normally vascularized. There is no abnormal indentation on the barium-filled esophagus.

Dr. Littmann: The vascular channels in the lungs are not too large or too small?

Dr. Gibbons: If anything, they are sparse, but I think one can see good-sized vascular channels throughout the cardiac silhouette.

Dr. Littmann: Two features of the circulation times are fascinating: The amount of Decholin used, and the times themselves — seven and eight seconds. This girl, who was apparently of normal size for her age, was practically an adult. It has been my experience that in people with normal hearts an end point cannot be obtained with 1 cc. of Decholin; it takes 2.5 cc. to 3 cc. In general the amount of Decholin required to determine a circulation time varies with the speed of the circulation time. People who are in congestive heart failure and in whom a long circulation time is anticipated may require 5 cc. Only in patients with unusually rapidly circulations can one expect to obtain an end point with 1 cc. I asked Dr. Myers what the normal circulation time was for a fifteen-year-old girl. He believed that it should not be much different from an adult's — perhaps as short as twelve or as long as twenty seconds. If she had been nervous, excited or febrile, the circulation time might have gone down to eleven or ten seconds, but it surely should not have decreased to seven seconds. Was the circulation time of seven seconds, therefore, a manifestation of an abnormal shunt from right to left, or could a circulation time that brief occur in conditions with high output and rapid circulation such as *cor pulmonale*? I have not yet settled that question in my mind. Certainly, if there was an abnormal shunt from right to left all the Decholin did not cross the shunt into the

systemic circulation. For the sake of argument, let us assume that half of it passed through the shunt. In that case I am asked to believe that an end point was obtained with 0.5 cc. of Decholin. This I find difficult to accept. It would imply that there was a defect high in the ventricular septum and that the right ventricle squirted its contents almost directly into the left ventricle.

The patient became restless and died in a fashion that is fairly characteristic of some patients with pulmonary heart disease. I have observed 2 such cases, and I have heard of others. The patient died suddenly, unexpectedly, sometimes after a meal and commonly without any apparent cause; at autopsy there was no obvious reason for death — at least there was no evidence of a cerebral or cardiac accident.

I have to decide whether this was a case of congenital heart disease, with cyanosis, or of pulmonary vascular disease or possibly a combination of the two. Most cases of congenital heart disease with cyanosis have this throughout life with the notable exception of those with Eisenmenger's complex. In this condition even though there is a shunt, or the possibility of a shunt, with an overriding aorta that receives blood from both ventricles, the amount normally entering the aorta from the right ventricle is insufficient to cause cyanosis, at least in the early years of life, but as the child grows older, vascular changes occur in the lungs. Increasing pressure in the pulmonary tree forces larger and larger quantities of blood from the right ventricle to be shunted into the systemic circuit, resulting in cyanosis. Therefore, Eisenmenger's complex is a definite possibility in a girl who manifested cyanosis at some time before her tenth birthday. Yet there are several details that militate against this diagnosis. In the first place there was little or no murmur. The few patients that I have seen — and I can number them on the fingers of one hand — all had systolic murmurs of considerable intensity and frequently diastolic murmurs, which arose from the aortic or pulmonary valve. Moreover, strain appears on both ventricles so that there is commonly no evidence of right-ventricle hypertrophy by electrocardiogram. There may be normal axis deviation, and, in some cases, hypertrophy of the left ventricle. The presence of right-ventricle hypertrophy makes this diagnosis unacceptable,



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1. Martin, W. J., et al.: J.A.M.A. 160:928 (March 17) 1956.

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at least at the moment.

Another lesion that could conceivably account for the findings is the tetralogy of Fallot in which there are sometimes few murmurs but with which there should be cyanosis from birth and evidence of inadequate physical development. This girl was well developed for her age. With isolated pulmonary stenosis there may be a large pulmonary artery, but here too I should anticipate not only a loud murmur but other manifestations. A single ventricle could conceivably have produced this picture, but I find it hard to accept. In view of the history of rheumatism, I suppose I ought to consider the possibility of mitral stenosis, which can cause cyanosis, but I am not sure it ever does to this degree. Though I have less faith in the presence or the absence of murmurs than I once had, I still find it difficult to accept mitral stenosis as occurring in a heart without any apical diastolic murmur.

The diagnosis of primary pulmonary vascular disease is one that agrees with many aspects of this case. This is a condition that, for the most part, has an unknown origin, occurs at any age, including infancy, and in either sex — in the few cases that I have looked up, it was predominantly in the female. It is thought by some to be of congenital and by a few investigators to be of rheumatic origin, but for the most part nobody quite knows the etiology of the sclerotic changes that are seen in all coats of the small and medium vessels of the pulmonary tree. In some cases there is evidence of thrombosis of the smaller vessels with subsequent organization. This I suppose is the same as Ayerza's disease or the so-called black cardiac disease. Patients with this condition show an inexorable progress with a fatal termination in a few months to as long as fifteen years. These people have weakness, vertigo, shortness of breath, cyanosis and clubbing; they may have anginal pains and fainting spells and may die suddenly. The description fits this particular case. But I wish that the circulation time had not been quite so brief. In the articles I looked up no mention was made of the circulation time except in one by Taquini et al. A few years ago they studied some 10 cases in which the circulation time was actually slow. However, all the patients were older and were in heart failure at the time. The slow circulation time may have been due in

part to the heart failure and in part to the increased viscosity of the blood resulting from its high cellular and protein content.

I am left, therefore, with these two possibilities. Still another that might be considered a straddle between them is primary pulmonary vascular disease existing simultaneously with a patent foramen ovale. In Eisenmenger's complex, the same situation exists; there is a congenital defect followed as in this case by pulmonary vascular disease. However, I shall say that this girl had primary vascular arteriosclerosis of the lungs and no congenital heart disease; my second possibility is Eisenmenger's complex.

Dr. Butler: Dr. Nadas was the visiting physician when this child was admitted to the Children's Service. As his period of service ended a day or two after her admission he, for the purpose of this conference, may have the advantage of not knowing the autopsy findings.

Dr. Nadas: When we talked about this patient on rounds I think I came to about the same conclusion that Dr. Littmann has reached — that is, primary pulmonary hypertension based primarily on increased pulmonary arteriolar resistance. We have seen children with identical clinical, radiologic and electrocardiographic pictures who turned out to have that condition. They also had the syndrome of weakness and syncope. I should not be surprised if one would have to straddle the fence and assume the presence of two conditions, the second being a communication between the two sides of the circulation, to explain as long lasting and as deep a cyanosis as this girl had. I should still call it primary pulmonary hypertension, however, and assume that the defect between the two sides probably did not have a casual relation to the increasing pulmonary arteriolar resistance. We have seen a series of children with ventricular defects whom we have had the opportunity of following from infancy; their lung fields always looked ischemic. They did not go through a phase of increased flow that caused pulmonary arteriolar disease and thus resulted in the picture of ischemic lung fields; if the lungs were ischemic at ten or fifteen years of age, they were also ischemic at ten months. I have seen this picture in patients whom we know have defects of the ventricular septum; hence I could bring in the diagnosis that there

was a primary pulmonary hypertension, which does not necessarily exclude the presence of a defect between the two sides of the heart, but I do not know that the two were in casual relation.

Dr. Gordon S. Myers: I might say that in this hospital we have seen patients with pulmonary vascular disease and a defect of either the auricular or the ventricular septum or a patent ductus arteriosus with little or no murmur.

Dr. H. L. Heyl: How long before death was the Decholin given?

A Physician: Actually, the patient was dead about twenty minutes after the Decholin was given, but she was not pronounced dead until forty-five minutes later; we tried for ten minutes to revive her.

A Physician: Do you think the Decholin was in any way responsible for the death?

Dr. Littmann: Literally, millions of tests are performed with Decholin, and nothing ever seems to happen. There was some warning about the use of ether in people who are assumed to have a right-to-left shunt; apparently deaths have occurred under that particular circumstance. I think in this case the use of Decholin per se had little to do with the outcome. It should be remembered that the patient had syncopal attacks with emotional trauma; perhaps the procedure itself was enough of a nervous shock to precipitate an attack.

Dr. Butler: The physicians on the service were apprehensive about carrying out procedures necessary to establish the diagnosis; they believed, however, that the diagnosis could not be made without so doing and selected as the first procedure one they assumed to be the least fraught with danger.

Dr. Littmann: Whatever the diagnosis turns out to have been this was probably not a case in which surgery would have been expected to be of benefit.

Dr. Nadas: Yes; at the same time we are justified in trying to find out all we can about a girl whose cardiac reserve was very limited and who could have had a lesion such as pulmonary stenosis and a patent foramen ovale, which, however, did not seem likely. At the time, in view of the severity of the condition, we believed that diagnostic procedures were justified.

Dr. John T. Quinby: Did you ever see a pulmonary arteriovenous shunt that was large enough to cause this amount of cyanosis but that was not visible in the x-ray films of the lung?

Dr. Littmann: To cause this amount of cyanosis I should think it would have to be visible.

CLINICAL DIAGNOSIS

Congenital cyanotic heart disease.

Pulmonary endarteritis, with pulmonary hypertension.

DR. DAVID LITTMAN'S DIAGNOSIS

Primary vascular arteriosclerosis of lungs.

? Eisenmenger's complex.

ANATOMICAL DIAGNOSIS

Congenital heart disease: aortic-pulmonary-artery septal defect. Pulmonary vascular disease.

PATHOLOGICAL DISCUSSION

Dr. Robert H. Fennel Jr.: We found at autopsy that the heart was not enlarged. It weighed 270 gm., not excessive for a patient of that size, but the right ventricle was greatly dilated and hypertrophied. The wall was 14 mm. thick, the same as the left ventricle, and in the volume of the cavity and appearance of the papillary muscles, the two ventricles were similar. The valves were all normal. Nothing suggestive of rheumatic fever was found in the valves or myocardium. The foramen ovale was closed. The origin and distribution of the coronary arteries were normal. The only abnormality of the heart or great vessels was a defect in the septum between the aorta and pulmonary artery. This was a rounded opening, 1.2 cm. in diameter, and was located 1 cm. above the upper edge of the aortic cusps. We could dissect between the aorta and pulmonary artery below the communication to make a space 1 cm. long, a distance above the right coronary artery that was probably sufficient for the surgeon to have attacked this lesion. The edge of the defect was smooth, and the walls of the two vessels seemed to be fused. Beyond the defect the aorta and pulmonary artery branched normally. There was mild atherosclerosis in the main pulmonary artery. The ductus arteriosus

"You try
to scrub the
bathtub
with your
back aching
morning
till night!"

"I don't know
about bathtubs,
but two days
ago I couldn't
reach a
shelf higher
than that."

"I thought maybe
I slept in a
draft. Never had
a stiff neck
like this before."

"That's nothing.
I went around
with my arm in
a sling for
nearly two weeks—
had to sleep
with a pillow
at my back
so I wouldn't
roll over on it."

"I thought
I was getting
too old
for high heels—
low heels
didn't help.
My leg hurt
down to
the ankle."

"That's fu
I'm on m
feet all o
but it wa
my arms
bothered



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analgesia; doubly protected with antacid and supplemental vitamin

"My back
was so tight
I couldn't
even get on
and off
the bus;
now I can
climb stairs."

"Take it
from me,
you should
be glad
you saw him
early in the
game so he
could do
some good."

"Good?—
why, he's
got me doing
exercises
I haven't done
in years."

"I hope
he helps
my knee
that quick."



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was closed.

Embryologically, such a defect represents incomplete partitioning of the truncus arteriosus. In the 5-mm. embryo two ridges grow into the lumen of the large vessel that extends cephalad from the heart, and these two ridges meet to separate the vessel into pulmonary artery and aorta. Presumably, in one area the two ridges did not meet in this patient, and so a communication remained. Collett and Edwards consider this a variation of a persistent truncus arteriosus and classify it as Type 5.

This is an uncommon anomaly as judged by the few available cases, only about 25 having been reported up till several years ago. That number has been increased by recent reports of cases that were diagnosed clinically either by aortography or by catheterization or were found accidentally at the time that an operation was being performed with the intent of ligating a patent ductus arteriosus. Gasul and his co-workers have diagnosed 1 case by retrograde aortography, and Dexter, at the Peter Bent Brigham Hospital, found such a case by accidentally placing a catheter through the opening between the aorta and pulmonary artery. Adams et al. also report 5 cases of this type of anomaly recognized by catheterization studies. Of the several cases that have been recognized at operation after a misdiagnosis of patent ductus arteriosus 1 is reported from this hospital and 4 cases are reported by Gibson and his associates. Gross has operated on a patient who was thought to have a patent ductus arteriosus; at operation this type of defect was found and successfully repaired. Scott and Sabiston have also performed such an operation with a successful result. It is therefore not merely of academic interest to diagnose this condition.

Most of the cases have been similar to this one. The defect is usually in the first several centimeters of the aorta, and the defect has varied from 0.5 to 3.0 cm. in diameter. There are no consistently associated anomalies, and when other anomalies are present they are usually of little significance. The clinical picture is not distinctive, and, as indicated above, most of these cases have been diagnosed as patent ductus arteriosus.

An acquired communication may simulate this condition, and some of the cases reported

seem to have been of this nature. Shepherd's and Moorhead's cases are probably examples of this. There is a possibility that a patent ductus arteriosus will be mistaken for aortic-pulmonary septal defect, and Lutemberger's case seems to have been an example of such a misinterpretation.

Of the remainder of the autopsy study, only the lungs were significant. They were light and fluffy. The pulmonary arteries were conspicuous, even toward the periphery of the lung. The bronchial arteries when injected were slightly more prominent than usual, but there was no striking change in them. Microscopical study of the lungs revealed changes in the vessels that are somewhat puzzling. There was fibrous intimal thickening of the arteries and arterioles, and a few of the vessels contained organized thrombi or emboli because there were multiple lumens lined by endothelium and separated by loose connective tissue. Many of the small arteries were completely occluded by loose connective tissue. In the walls of many of these one could find multinucleated giant cells in what was apparently the lumen and adjacent to the internal elastic lamina but also farther out in the wall. In a few places evidence of phagocytosis of the elastic tissue by the giant cell was found — a picture that one sees typically in the so-called giant-cell or temporal arteritis. Also, adjacent to some of these giant cells were small flecks of calcium. There was no evidence of necrosis in the vessel wall and no evidence of an acute reaction. The media of the arteries and arterioles did not seem to be thickened.

We know from experimental observation and from what Castleman and Bland have seen in human patients that changes such as this can result from emboli. Bernard in England, injected autogenous fibrin thrombi and described acute arteritis and also described some giant-cell reaction in the walls where the fibrin was being deposited. The intimal thickening may be due to organized emboli or thrombi such as Muirhead and Montgomery produced experimentally in animals. We demonstrated no source for emboli however, and I do not know that we should particularly suspect that. Perhaps they were thrombi. The fibrous intimal thickening resembles what has been seen here in a study by Thomas and others. It is also similar in some respects to the vascular changes

that one sees in mitral stenosis.

In summary, this patient had a congenital heart lesion but had in addition pulmonary vascular changes, which I am quite sure were secondary to the congenital heart lesion, but I have no absolute proof of that. The incidence of thrombosis and embolism is so common with heart disease that I believe the association is more than coincidental. Some of the intimal proliferation was undoubtedly due to the pulmonary hypertension, but I do not believe that that is the whole story.

Dr. Sprague: Was the head examined?

Dr. Fennell: It was normal.

Dr. Allan Friedlich: Are some of the changes in the pulmonary vessels similar to those described by Rich in patients with the tetralogy of Fallot? These patients also have decreased pulmonary blood flow and increased blood viscosity that may lead to thrombus formation.

Dr. Fennell: They do resemble them. I am not sure where they fit with this picture, though, because here the flow is greater, not less, than normal.

Dr. Butler: At first thought one wonders why the x-ray films did not show increased blood flow in the pulmonary vessels. I suppose, however, that pulmonary vascular disease prevents increased blood flow through the vascular bed.

Dr. Fennell: I think there must have been quite a marked embarrassment of flow through them. We injected the bronchial artery and found that the pulmonary vessels were prominent but not markedly so.

Dr. Sprague: I think the point that Dr. Nadas brought up is very important. He says that, in successive x-ray films taken over a period, he at no time saw the lungs full of blood. In the usual case in the adult, which we may see in only the fully developed state, we usually do not have the advantage of a previous knowledge of what the lungs looked like on x-ray examination. Here, however, there is definite evidence that the pulmonary pattern was always that of decreased, rather than increased, vascularity; in other words, the vascular changes were not secondary to mechanisms of excessive blood flow.

Dr. Nadas: There is one other point. It seems inconceivable to me that a girl with a large enough left-to-right shunt to have resulted in these changes should have grown up to have

a normal-sized heart at the age of fifteen. All those in whom this condition develops on the basis of a pre-existing large pulmonary flow have large hearts.

Dr. Myers: Furthermore, these changes may occur very early in life. We had a recent patient with patent foramen ovale and marked pulmonary vascular disease whose symptoms began shortly after birth and who died at two and a half years of age.

Dr. Nadas: That case was similar to the one under discussion. I have seen one at autopsy at the Floating Hospital with pulmonary vascular changes alone and no septal defect.

Dr. Fennell: I was impressed with its resemblance to the changes seen in the vessels of other patients with congenital anomalies who have associated pulmonary hypertension.

Dr. Sprague: And they are not confined to vessels of one caliber like the ones described by Castleman and Bland?

Dr. Fennell: The most marked findings were in the small arteries. There was some thickening in the small arteries and arterioles, but the changes that I think were organized thrombi, or emboli were primarily in the small arteries.

Dr. Owen: Some believe that the Decholin was responsible for the patient's death. I wonder if Dr. Fennell knows of any such reactions.

Dr. Fennell: I am afraid I cannot explain it very well.

Dr. Myers: I do not think it is possible to be at all certain of the mechanism of death, but one possibility is that there was eventually a sharp decrease in systemic resistance, which increased the right-to-left shunt at the base of the aorta and therefore flooded the coronary and cerebral circulation with unoxygenated blood.

Dr. Edward F. Bland: The reason for this is that the systemic blood pressure had gone up.

Dr. Myers: That was the earliest effect, but the blood pressure then fell again.

Dr. Littmann: I had a patient with a different background who died recently. That was a man who had similar lung disease resulting from numerous minute emboli, essentially the Bland-Castleman condition, and who during a meal, died between mouthfuls. There was no other precipitating factor. That seems to be the usual manner of death of people with gross pulmonary hypertension.

THE *President's* PAGE

ANOTHER ELECTION IS NEAR

MANY of you have been kind in writing to me and submitting your comments on my last month's page. I wish to thank all of you for your comments and suggestions.

Another election is near. This should give us occasion to pause and reflect, as other good citizens do, on the qualifications and promises of the various candidates. Political office-holders represent us, too; and they should be reminded of that repeatedly and loudly. It shames me and grieves me to realize that the medical profession is being degraded into a maligned minority by economic planners and schemers who are intolerant of minority views and rights. I do not advocate that we must curse and rage petulantly against those who would scheme to engineer the disruption of doctor-patient relations in the guise of "better health planning"; however, we could be more virile and vocal in our arguments, and less apologetic and defensive.

Often, I have wondered, why the lay press singled out the physicians of this country as targets in a campaign of vilification? Are we really the scoundrels that have been portrayed in sensational articles? Are we being made the whipping boys in an attempt to stimulate a lagging circulation? Or do these writers honestly believe what they write, — that better medical care can be achieved through socialism and the submersion of individual rights to an all-powerful statism? Is the vilification of the doctor a maneuver in the struggle to achieve socialism? Or again, I ask, — are we really evil?

No! I cannot accept the accusation that I — or any of my colleagues are blackguards. True! — there may be some rascals in our ranks, — as in any other profession, — but truly honest efforts are made to detect, expose and punish them, or, at least, to restrain them. I am not being a Pollyanna when I say that these rascals are but a tiny fraction of our profession.

Then, why must we be defensive and apologize for wanting to do our work honestly, diligently, faithfully and exercise those skills for which we have served expensive years of training, — and ask for fair payment for these services? The plumber, carpenter, mechanic and farmer get paid. Why shouldn't we?

To convince the public that we deserve the pedestal of respect upon which we once stood, I submit that it is not necessary to engage firms of public relations experts to advertise to the world what wonderful men we are. Laudatory radio or television programs or newspaper or magazine articles are not needed. It's so simple! Let the doctor do his work with clear conscience and with the pride he deserves. Then each doctor's office will become a veritable "public relations center."

A. I. Podolsky, M.D.
President, Arizona Medical
Association

Editorial

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The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Cert in general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
 2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
 3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
 4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
 5. Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.
 6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.
 7. Exclusive Publication—Articles are accepted for publication on condition that they are contributed solely to this Journal. Ordinarily contributors will be notified within 60 days if a manuscript is accepted for publication. Every effort will be made to return unused manuscripts.
 8. Illustrations—Ordinarily publication of 2 or 3 illustrations accompanying an article will be paid for by Arizona Medicine. Any number beyond this will have to be paid for by the author.
 9. Reprints—Reprints must be paid for by the author at established standard rates.
- The Editor is always ready, willing, and happy to help in any way possible.

QUALITY — QUANTITY

WHEN NO less an authority than the Wall Street Journal, (15 June, 1956), tells us in headlines "Medic Merchants — Doctors Treat More Patients Faster. Some Level Fee Schedules", it is refreshing to read in a recent issue of "Look", (21 August, 1956), that one doctor finds it impossible to give good service when he is pressured into seeing 40 or more patients in one day. The "Look" piece, titled "Why I Stopped Being A Family Doctor" and subtitled "A general practitioner explains why he, like many of his colleagues, feels he can't take it any more", is good reading for us — and also for the public. The author lays it on the line. The article is brief and the reader has the feeling that it is entirely earnest. The young doctor (after all, he has been doing general practice for only three years) is tired of doing high class first aid — or "not so high class at times", he is fed up with compromising with quality, frustrated that he hasn't time to keep abreast of new medical discoveries, harassed because his personal life as a citizen and a family man is regularly sacrificed in behalf of the effort to serve all comers. He deplores the "popular myth that a doctor is a hybrid of saint and superman, indefatigable, generous, and nerveless." Young as he is, the author has obviously experienced and fully values the rewards and obligations inherent in medical service. He is no less dedicated because he forsee that in continuing bone weariness he cannot be the "good, steady, cheerful, confident doctor I want to be to all my patients".

The Wall Street Journal article, written by a staff reporter attending the A.M.A. convention in Chicago this past June, is not such good reading. A suitable sub-headline, under "Medic Merchants", might have been "Suckers Seek Subterfuges". We learn that "like many another merchandiser the 225,000 doctors who sell their services behind an M.D. license are handling a record volume of business this year". It is made clear that doctors have been slower to raise fees than other sellers of merchandise or service and that the average doctor working 62 hours per week is currently paid \$4.87 per

hour. By and large, fees haven't changed in 10 years. The cost of living, according to the United States Bureau of Labor Statistics, has increased 92.8% from 1939 through 1955. In the same period general medical practitioner fees have increased only 67%, says the same bureau. A hike from \$3.00 to \$5.00 for a unit of medical service could provide all of that 67%!

The reporter apparently took time to interview various groups of specialists and general practitioners and selected typical answers as to methods for meeting the problem of more demand and less return. The answers fitted a pattern — work harder, work longer, work faster. Under a paragraph headline "Wasting less Time" an E.N.T. specialist was quoted, "patients' histories are taken by a secretary as soon as they come into the office. I study (sic) the histories before seeing patients in separate rooms and I have an idea of what to expect. This way I can treat four patients at a time, in different rooms, without wasting the patient's or my time." The next paragraph, headlined "More Time Per Patient" begins with a quotation from Dwight H. Murray, M.D., President of the A.M.A., identified as a general practitioner from Napa, California — "We must humanize and personalize the practice of modern medicine. We physicians should arrange our working schedules so that we can give a little more time to each patient."

It is comforting to turn from the spectacle of 2000 beat-up practitioners waiting in line for free physical exams sponsored by the American Academy of General Practice at the A.M.A. convention last June "because this is the only time some of these doctors have for a physical examination" to the quiet words of the "Look" author who refuses to see 40, 50, or 60 patients in one day and looks forward to "enough time to live, study, rest and recuperate from physical and mental exhaustion."

C.L.R.



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The History of Medicine

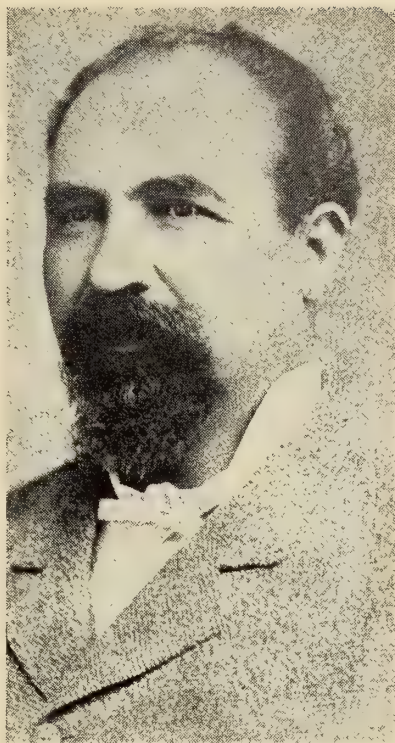
NARCISO HEREU MATAS, M.D.

(Tucson 1881-1904)

By W. V. Whitmore

THIS PROMINENT physician and distinguished citizen was born March 5, 1887, in the ancient and historic city of Gerona, in Catalina, Spain. His father was Manuel Hereu and his mother, Paula Matas, both natives of the same city and descended from old families which traced their ancestry as land owners and olive growers to the 15th century. From this union nine children were born. Dr. Matas, the eldest of the family and his hister, Theresa, were the only survivors. She is the widow of Jose Ferrer, a distinguished lawyer and author, of Gerona.

According to Spanish custom the mother's name is always appended by the offspring to the paternal patronymic or family name, and, in accordance with this usage, Dr. Matas always signed his name Narciso Hereu (the paternal name) and Matas (the maternal name) a custom which he continued in America. In consequence he was called in America by his last name, Matas, though all people of Spanish origin would have known that his family name was Hereu, omitting Matas, which was only a final tribute to his mother. He realized, but too late, that this compliment to the mother is not understood in the United States and other Anglo-Saxon countries and he should have discontinued the maternal name of Matas, or merely indicated it with a single letter M, as is done by many South Americans when they take up their residence in this country, thereby saving his paternal patronymic from confusion. Therefore, when he married Miss Theresa Jorda Ponsjoan, the daughter of a distinguished sea captain of the Port of San Feliu de Guixola (also in the province of Gerona) in 1856, their two children, Rudolph and Elvita, who were born in the United States, retained the name of Matas, while in Spain they would have been properly recognized by the name of Hereu Jorda (their paternal and maternal names). Thus it happens that Dr. N. Hereu Matas transmitted the name of Matas to his children and that his son, who has attained great distinction in this country as a surgeon, is universally known as Dr. Rudolph Matas.



Dr. Narciso Hereu Matas

Dr. Narciso (latinized Narcissus) Hereu Matas received his early and premedical education in the Catholic Seminary of Gerona, from which he was graduated Bachelor of Philosophy, equivalent to the degree of Bachelor of Arts in America.

On first coming to America with his bride in 1857, he devoted his whole attention to acquiring the English language and he made such quick progress that he was able to matriculate at the New Orleans School of Medicine a few months after his arrival, while managing a drug store which he purchased with the aid of his brother-in-law, Thomas Jorda, a resident of that city. He made such rapid headway in his medical studies that he was graduated M. D. in 1859. He then engaged in the practice of medicine at Bonnet Carre, St. John's Parish, near New Orleans, where his son Rudolph, was born in September 1860. Though only 23 years old at the time he was very popular as a physician and much esteemed in the Parish. As a result of some profitable speculations in 1861, with the outbreak of the Civil War, he decided to leave his practice and return to

Europe in order to devote himself to the study of Ophthalmology as a specialty. To this end he transferred to Paris, France, where he took special courses under deWecker and Galezowski, the greatest masters of that specialty at that time. He assiduously attended the clinics and laboratories during the two years that he studied in Paris. He then settled in Barcelona, Spain, and matriculated in the Medical School of that celebrated University where the exceptional qualifications he had obtained in Paris and in New Orleans, quickly won for him an *ad eundem* degree in medicine at Barcelona and a licentiate's diploma in the University of Madrid. He thereupon established an Eye Clinic in Barcelona and with the aid of his distinguished friends, Dr. Garreras Arago, the outstanding oculist of Catalonia, and Professor Letamendi, Dean of the profession in Barcelona, he organized a Medical Society which represented the elite of the profession in that city. He worked intensely and with great enthusiasm in his eye clinic, devoting the most of his time and thought to his professional literature and scientific interests. Unfortunately certain investments proved a disastrous venture and he was almost compelled to return to America.

He arrived in New Orleans about 1867. Here he received an invitation from wealthy members of the Spanish colony in Brownsville, Texas, and Matamoros — the Mexican city across the Rio Grande River. There with his characteristic energy and ability he soon built an extensive and lucrative practice. There his daughter, Elvita, was born. She was partly educated in Brownsville, but completed her education at the Convent of the Sacred Heart in New Orleans, where her brother was attending college and preparing for his professional career in the Medical Department of the University of Louisiana. She has never married and is now living at the old ancestral home of her maternal parents in San Feliu de Guixola, Spain. Dr. H. Hereu Matas remained on the frontier, practicing alternately in Brownsville and Matamoros until 1881, when he moved his domicile to Tucson. The following year he returned to Brownsville to aid his friends and the afflicted people of that city during the Yellow Fever epidemic that devastated the Rio Grande Valley on both sides of the river. After the extinction of the epidemic, he returned to Tucson where he resumed his practice in the fall of

1882. In 1883 he went to Hermosillo, Sonora, Mexico, where he rendered valuable assistance during the Yellow Fever epidemic that prevailed in that place.

With the exception of these two Yellow Fever relief expeditions to Brownsville and Hermosillo in 1882 and 1883, he resided continuously in Tucson until 1904, when, in failing health, he decided to visit his son, Rudolph, in New Orleans. There he had to undergo an operation for glaucoma which threatened his vision. He improved and was living at his son's home in happy and affectionate surroundings, when he was suddenly stricken by apoplexy and died in his son's arms on April 13, 1904. He died about one month after he had attained his 67th birthday. His remains are interred in his son's family tomb at Metairie Cemetery in New Orleans.

He is survived by his only remaining sister, Theresa Hereu de Ferrer who resides in Torroella, Province of Gerona, Spain, who is still active at the age of 95 years. His daughter, Elvita, who has resided in Spain since her mother's death, and his son Dr. Rudolph Matas, who is now an Emeritus Professor of Surgery at Tulane University and one of the most distinguished and honored surgeons of the South.

In 1893 he married Mrs. Louisa M. Mallet who was born in Brownsville, Texas, of French and German ancestry, and from this union a daughter, Irene, was born, who since her mother's death resides in Los Angeles, Calif.

Dr. Matas was an enlightened, progressive and unusually well educated physician who loved his calling and kept himself informed in everything pertaining to his chosen profession. He was familiar with English, French and Spanish literature, speaking these languages fluently. He was naturally of a literary turn of mind and the thorough academic training that he had received in the Seminary of Gerona had given him a perfect mastery of his native Spanish, which he wrote and spoke with the force and elegance of a classical scholar. Despite his constant occupations and preoccupations, he found time to indulge in poetry and in essays which revealed his literary tastes and culture.

Withal, he was an ardent admirer of the English language and literature and his affection for American people was boundless. The

United States was the country of his adoption and he was ever loyal to its ideals, though true to his love for the mother country.

In 1892 he was a member of the International Medical Health Association which met in Mexico City and was a member of the first Mexican Medical Congress held in that city, taking an active part in its work, especially in the Surgical and Pathological Sections.

During his residence in Tucson he served as County Physician and as City Health Officer — also had been medical examiner for nearly all of the fraternal societies and life insurance companies represented in Tucson, and was pension examiner, one term. As a side issue he was interested in gold, silver and lead mining and in several of his mining ventures was quite successful. He took great interest in civic affairs. He was a director of the Tucson Street Railway, of which he was one of the organizers and was president for a time. In this and other ways he contributed to the development of the city.

In politics, Dr. Matas was independent. In religion, though a hereditary Catholic, he was a free thinker, unprejudiced and liberal toward all religious creeds. In his social relations he was a Mason, a member of the Benevolent Protective Order of Elks and of the Ancient Order of United Workmen. In medicine he was thoroughly honorable, ethical and free from shame. He was a member of the Arizona Medical Association and a firm believer in medical organization. Quite apart from the early papers that he contributed to medical literature, while a specialist on the eye, in Barcelona, he wrote a number of very able articles and essays upon subjects and notably on Yellow Fever in which he had much experience. As a thoroughly cultured and conscientious student, a fine observer, of broad vision and unquenching thirst for knowledge — which he displayed up to the last moments of his life — his counsel was of exceptional value as a clinician at the bedside, and won for him a place in the foremost ranks of his profession.

PUBLIC RELATIONS AWARD — Blue Cross — Blue Shield

Pictured are Dr. G. Robert Barfoot, 2037 N. Central, Robert R. Rinehart, 6003 E. Cheney,



Left to Right: Dr. G. R. Barfoot, Phoenix; Robert R. Rinehart, Scottsdale; Dr. C. B. Warrenburg, Phoenix.

Scottsdale, and Dr. Clarence B. Warrenburg, 5835 N. 2nd Ave. The three are admiring the trophy presented the Arizona Blue Cross-Blue Shield by the Blue Cross-Blue Shield Commissions for its winning the overall public relations competition for plans under 200,000 in Canada and the United States.

The award marks the seventh first place award for the Arizona Plan in the past six years, the twelfth presentation honored by Rinehart since the awards were originated in 1946 when he was associated with the Columbus, Ohio Blue Cross Plan. The presentation was made this year at the national Blue Cross-Blue Shield public relations institute which was held at the University of Wisconsin, Madison. John McGehee, executive secretary of Kiwanis International was chairman of the judging committee.

The winning entry dealt with newspaper, billboard and radio advertising, subscriber relations, hospital relations, medical relations and employee relations.

Dr. Barfoot is president of Blue Shield. Dr. Warrenburg is vice president of Blue Cross, while Rinehart is public relations director for both prepayment plans.

TOPICS OF *Current Medical* INTEREST

RX., DX., AND DRS.

By Guillermo Osler, M.D.

POLIO VACCINE got off to such a bad start that it is hard to believe the progress in 12 to 18 months. . . . The vaccine is now said to be 100% safe. It is very effective in preventing paralytic cases. It is most effective when all three injections have been given. . . . The public has not kept up with the good news, and it is hard to blame them. Even in Chicago, with a serious epidemic, free vaccinations were met with apathy. . . . Not so bad as in some Oriental countries, where propaganda says that white doctors eat children. It takes more selling to put a drug or procedure across in such circumstances.

In the dim distant past (30 years ago!) it would have been a sensation to hear of the **SYNTHESIS OF A MAJOR HORMONE**. Now it is a paragraph. . . . du Vigneaud and associates at Cornell have put together **VASOPRESSIN**, a pituitary hormone formerly extracted in tiny amounts from the gland of hogs. . . . The substance is non-allergenic, and equal in strength to the natural extract in cases of diabetes insipidus.

Cooking **PORK** has been strongly recommended to prevent transmission of trichinosis. . . . It is now probable (tho not certain) that **TOXOPLASMOSIS** is also transmitted by uncooked pork. . . . The disease is now very common, tho very mild, and 30 to 70% of middle-age adults are infected in certain areas. . . . There may be some other unknown means of transmitting the disease to man. The disease resembles a pneumonitis.

Dr. Maria Schnee Haynes has a set of basic rules on how to be **HAPPY THO SLIGHTLY DECREPIT**. Dr. Haynes is a Ph.D. at UCLA, and came from Austria. . . . Her rules suggest that one must start at an early age. (Perhaps this is what our children could be doing instead of patronizing us.) 1. Find out, when you are young, what qualities in old people are admired by the young. Remember them. 2. Never praise the good old days. Live in the present. 3. Learn to be well-balanced and to control anger. 4. Keep alive intellectually. This means not only cultural activities, books, but an interest in all things about you. (Whoops! maybe it includes baseball, T.V., etc.?) 5. Maintain perfect personal hygiene. 6. Start to be pleasant when young. You can't suddenly be a pleasant old man.

GERIATRICS' journal, 'devoted to Diseases and Processes of Aging', uses the summary-at-the-beginning-of-each-article technic. . . . The July issue had a good discussion of **PERIPHERAL**

VEIN problems. You must take a calculated risk if you use a conservative program for varicose veins. Thrombosis and inflammation of leg veins may be handled by drug and surgical therapy. . . . If it is the **ARTERIES** which are in trouble, by-pass operations are very helpful for occlusion of the iliac and femoral vessels. Arterial homografts are best, and 92% of 73 cases at Baylor (de Baakey, et al.) had a good symptomatic result.

Schering has put out an amusing, king-size folder to describe their '**Sigmagen**'. It is another shotgun drug which contains a **STEROID** drug (prednisone), **ASPIRIN**, an **ANTACID**, and **VITAMIN C**. . . . The folder shows a candid-camera view of 13 people and a dog, sitting on a bench, and almost all but the dog were griping about their aches and pains or giving testimonials to their relief. . . . It is notable that the advertising states that the drug should not be used in patients with peptic ulcer, agitated psychotic states, acute exanthems, herpes of the eye, and **TUBERCULOSIS**. . . . This leaves the small problem of diagnosis up to the physician. A few well-placed questions would help, but so would an x-ray of the chest.

NYLON has some interesting qualities, and some unusual usages. It would not be easy these days to say which hospital furnishing was made of nylon because it was flexible, light in weight, would withstand boiling and many chemicals, was not noisy nor chilly. . . . Hospital Topics' reports that this item is a nylon bedpan.

Scotland was one of the first countries to report on the use of **PAS** (para-aminosalicylic acid) as a treatment for **TB**. . . . They should know what they are talking about when they say that **PAS** has an **ANTI-THYROID ACTION**, and may produce hypothyroidism and sometimes a goiter. . . . We don't see it in this country, but maybe we should look more intently. . . . Macgregor and Sommer even suggest that all patients who receive **PAS** for more than 6 months should be given small doses of thyroid extract.

It is hard to decide what a trade-journal for drug stores resembles most. The 'West Coast Druggist' is a combination of high-pressure advertising for drugs and toilet articles; homage to drug houses, drug discoveries, and top salesmen; notices of new dealerships; summaries of legal rulings; discription of display methods; book reviews; gift suggestions; contest offers; product descriptions; sales talk; etc. . . . Quite a lot like,



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MEDICAL DIRECTOR
DUKE R. GASKINS, M. D.

Dear Doctor:

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an all time high . . . were covered by hospital insurance.
In addition, 94,000,000 people had surgical protection.

This, Doctor, means that you probably are going to have to
become accustomed to filling out more forms when your patients
are hospitalized.

We, here at HBA, are very proud of the fact that we make the
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97 per cent of them, the doctor only needs to fill out a
short surgical bill form so we'll know the amount to pay.
Previously, we tried asking only the doctor's statement,
but so often they said only "Balance Due" that we had to use
the present bill form.

On 2 or 3 per cent of the cases hospitalized, it is necessary
that we have additional information to make a just decision.
In those cases, we appreciate your help and cooperation.
If, at any time, you have any questions please be sure and get
in touch with me.

Very truly yours,

HOSPITAL BENEFIT ASSURANCE

Duke R. Gaskins, M.D.
Medical Director

DRG:sk

to be sure, a modern drugstore.

To prevent someone surprising you with the fact that United Solvents Inc. is about to open a plant which turns out 1,500,000 pounds per year of REACTOR-GRADE ZIRCONIUM SPONGE, we can say that it is used as a structural material for atomic reactors, and that the Atomic Energy Commission is buying two-thirds of the output from U.S.I. . . . It 'clads' uranium, since it has a low nuclear cross-section, and lets neutrons pass thru. It also has a high corrosion and heat resistance. . . . Another element, hafnium, which is always associated with zirconium in nature, must be removed. . . . This data will not allow you to converse freely with a physicist, but it may impress a few people at the next large dinner party.

In spite of all the hospital journals and all the hospital meetings it is not easy to find clues to successful hospital administration. 'The Modern Hospital' has analyzed the evidence as to what makes an INEFFICIENT ADMINISTRATOR inefficient. It may be due to his/her having, — 1. An all-or-nothing complex, or "perfect solutions only; no compromise". . . . 2. An urge to act from expediency. . . . 3. An obsession to win, even if only a moral victory. . . . 4. A tendency to classify everything as black or white. . . . 5. No sense of proportion or balance (the mountain-out-of-a-molehill urge).

Who says the Guvment doesn't TRUST doctors? It would seem as if Congress does, after the way they lowered the social security age for disabled workers, and put the decision as to disability in medical hands. . . . The age was lowered to 50 (vs. 65), and the impairment is to be 'physical or mental which will result in death, or be prolonged and indefinite'. . . . It could include 250,000 persons.

ANTIBIOTIC NEWS, — Garrod of London reports a remarkable efficacy of Terramycin in treating PERITONITIS from a perforated viscus. . . . Anwar and Turner urge, on the basis of experimental work, that Terramycin or penicillin be used in addition to tetanus antitoxin in cases of clinical TETANUS. The drugs are effective against Cl. tetani. . . . The current dose of VIOMYCIN in tuberculosis therapy is 2 gm twice weekly. It should be used with PAS or isoniazid, and in cases which are intolerant or resistant to other agents. . . . Oral tetracycline is quite effective in cases of ACNE, in spite of the insensitivity of isolated bacteria. . . . Lich insists that "there is nothing to be gained" by starting chemotherapy in chronic urinary tract infections before specimens are obtained for SENSITIVITY TESTS. . . . Terramycin ophthalmic solution is now shown to be far less irritating and probably more effective in preventing OPHTHALMIA NEONATORUM than silver nitrate.

HORMONE ITEMS,—HYDROCORTISONE 'va-

ginal tablets' will give prompt relief of itching from any infectional origin. There is a time lag after fungicidal agents are started before the pruritis subsides, and the steroid stuff fills the gap. . . . PROGESTERONE has been found to increase the remission rate of postpartum psychosis to nearly 100% in a series of Bower and Altschule. . . . Hydrocortisone SNUFF produced 'complete control of symptoms' in 23 of 24 patients with hay fever who had not responded to previous therapy, including antihistamines to the limit of tolerance. . . . LUPUS ERYTHEMATOSUS can be brought under control by prednisone or prednisolone, but Dubois recommends a routine use of an 'ulcer regimen', plus a low sodium diet.

NOTICE

Meeting of the Arizona Pediatric Society in Tucson the evening of November 16th and at 10:00 a.m. November 17th.

Speakers: Dr. Otis Miller — Periatric Dermatology. Dr. Butcher — Congenital Heart Disease.

St. Mary's Hospital, 8th Floor.

All doctors cordially invited to the Scientific Program.



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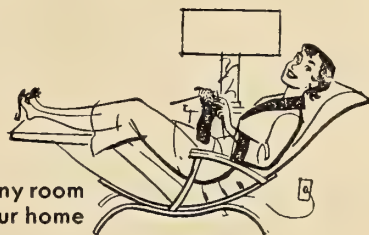
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The added tranquilizer control, desirably easing mental stress, also directly assists clinical progress. It minimizes the chance of exacerbation related to emotional strain and facilitates patient confidence and cooperation in the therapeutic program toward maximum rehabilitation.

ATARAXOID exerts the anti-rheumatic, anti-inflammatory activity of STERANE distinctly superior to previous steroids, effective in radically reduced dosage, and with minimal disturbance of electrolyte and fluid metabolism.

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the symptoms and the
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In Rheumatoid Arthritis,
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bronchial asthma and
inflammatory dermatoses

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Organization PAGE

Norman A. Ross, M.D.

AMERICAN CANCER SOCIETY, ARIZONA DIVISION, 1459 North 1st Street, Phoenix, Arizona.

The American Cancer Society, Arizona Division is anxious to make available to the physicians of Arizona pamphlets and educational leaflets that can be used by their patients and possibly distributed in the doctors' offices. For example a booklet entitled "Care of your Colostomy" has been prepared and is available for the use of patients having had this operation. It is a supplement to medical instruction and therefore, its distribution should be through physicians.

Another new publication entitled "Give your Doctor a Chance" is an attractive 25 page pamphlet designed to answer fully and reassuringly, lay questions about cancer detection and examinations.

GIVE YOUR DOCTOR A CHANCE is a comprehensive, graphically illustrated explanation of the nature of cancer — with emphasis on the facts about metastasis as the reason for the need of early diagnosis and treatment.

AMERICAN CANCER SOCIETY, News Service, 521 West 57th Street, New York 19, N.Y.

The resignation of Dr. Charles S. Cameron as medical and scientific director and vice-president of the American Cancer Society, effective after November 1 is announced.

Dr. Cameron will become dean of Hahnemann Medical College, Philadelphia, the institution from which he received his medical degree in 1935.

Dr. Cameron joined the Society in 1946, serving as assistant medical and scientific director and professional services director before becoming medical and scientific director and vice president in 1948.

Dr. Cameron's successor will be named by the Board of Directors at a later date.

The Editor forwarded to this office our Blue Shield letter under date of August 23, 1956, from the President of Arizona Blue Shield. We had also placed the letter in our file for this page.

Dr. Barfoot is to be commended for this explanatory letter to participating physicians. The

questions and answers as relate to the activity of Arizona Blue Cross and Blue Shield nationally, including identification of Medical Indemnity of America, Inc., are things we need to know.

We suggest additional questions that could be answered and with explanation.

We are told who owns Medical Indemnity of America, Inc. Who owns Arizona Blue Shield?

We have a physicians' fee schedule established in the Service Groups in the Arizona Plan. Who is empowered to reset the fee schedule in the local non-profit Arizona Blue Shield Plan? Who sets the fee schedule in the national stock company, the Medical Indemnity of America, Inc.?

How many financial reserves be expended by Arizona Blue Shield? How by Medical Indemnity of America, Inc.?

* * * *

THE SALVATION ARMY, 631 North 7th Ave., Phoenix, Arizona.

Excerpts from a brief address by Herbert Hoover at the Annual Luncheon Meeting of the Salvation Army in San Francisco, June 22, 1956:

"No one needs explain The Salvation Army. No one needs describe its multitude of good work. The main thing to do is to give them more money to do more good works. In addition to our money, we can give encouragement to all its members for their devotion; we can express our gratitude to them and our confidence in them."

* * *

"No matter what Utopian Government men may dream of, Governments live on statistics, and averages, and politics. They do not reach into the human heart. Governments cannot regenerate character or faith or courage which restores the dignity of individual men and women."

"* * * We must always have The Salvation Army at our side."

* * * *

Secretary's Letter, AMERICAN MEDICAL ASSOCIATION, 535 North Dearborn Street, Chicago 10, Illinois.

DEDUCTIONS FOR REFRESHER COURSES

The U. S. Internal Revenue Service has just

issued a regulation which is important to physicians.

Efforts over a long period of time by the A.M.A. Law Department to get the Internal Revenue Service to issue a regulation permitting physicians to deduct their expenditures in taking post-graduate "refresher" courses have finally paid off.

The regulation, effective on August 9, provides that expenditures for education are deductible if they are for a "refresher" or similar type of course taken to maintain the skills directly and immediately required by the physician in his employment or business. An educational course to be covered should be designed for established medical practioners to help them keep abreast of current developments in the profession; it should be of short duration; it should not be taken on a continuing basis, and should not carry academic credit. Education designed to prepare the practitioner to enter a specialty will not be acceptable.

When a physician travels away from home primarily to obtain "refresher" education, his expenditures for travel, meals, and lodging while away from home are deductible. However, expenses for personal activities such as sightseeing, social visiting or entertaining, or other recreation will NOT be allowed.

The proposal, A Medical School for Arizona Within Five Years, has received several boosts, not the least of which are these facts: New Mexico will start its two-year medical school in 1958, and their request for appropriations for operation of same, believe it or not, is \$150,000 per annum.

This statement of cost, the confidence elective officials and our public has in our teaching interest and ability, explains the work of such men as Senator Harold C. Giss of Yuma County and his fellow legislators on the Legislative Council. They propose that a program or study committee be developed in preparation for a medical school. The Legislative Council is moving ahead on this project and the Arizona Medical Association has been advised that the Council looks to our association for participating and for guidance.

THE NATIONAL FOUNDATION FOR IN-

FANTILE PARALYSIS, 120 Broadway, New York, N.Y.

The National Foundation for Infantile Paralysis announces that postdoctoral fellowships are available for full time study in preparation for careers in research and/or academic medicine, or in the clinical fields of psychiatry; rehabilitation; orthopedics; the management of poliomyelitis and preventive medicine.

Your applications may be submitted for these fellowships at any time. The meetings of the reviewing committee carry the dates of September 1, 1956; December 1, 1956; and March 1, 1957.

Address Miss Edith A. Aynes, Coordinator of Information, Division of Professional Education of the National Foundation for particulars.

You may look for additional notices on this page.

BOYS' CLUBS OF AMERICA, Inc., 381 Fourth Avenue, New York 16, N. Y.

BOYS' CLUBS OF AMERICA RECEIVE CONGRESSIONAL CHARTER

The First Congressional Charter granted to a national boys' organization in forty years is announced in the Boys' Clubs Bulletin. Similar bills introduced in the United States Senate and House of Representatives, co-sponsored by Senator Everett M. Dirksen and Senator Clinton P. Anderson and Representative Emmanuel Celler were passed unanimously, President Eisenhower signing the same into law.

THE CRIPPLED CHILDREN'S DIVISION Program, State of Arizona, Department of Public Welfare. This pamphlet is available from the Department of Public Welfare and is suggested as an excellent one for the doctor's waiting room.

MEETINGS:

A.M.A.'s Council on Industrial Health, February 3-6, 1957, Biltmore Hotel, Los Angeles, California.

The University of Texas, M. D. Anderson Hospital and Tumor Institute, Houston, Texas, November 9-10, 1956.

1957 ANNUAL MEETING

THE 66th Annual Meeting of our Association is scheduled to meet in Yuma, Arizona, April 10 through 13, 1957, with headquarters at Stardust Hotel. It is not too early to start planning for this important event and your Scientific Assembly Committee under the program chairmanship of Doctor Carlos C. Craig, President-Elect, has been hard at work developing an outstanding scientific presentation. This is the first of a series of articles which will introduce to the membership the guest orators who have accepted our invitation to participate, together with other items of interest.

Introducing Henry Dean Brainerd, M.D., of San Francisco, California.

Doctor Brainerd was born December 3, 1914. He received his A.B. degree at the University of California in May, 1935, and his Doctor of Medicine degree at the University of California School of Medicine in May, 1939. Interned at San Francisco Hospital during 1938-39; Assistant Resident in Medicine at University of California Hospital 1939-40; Resident Physician in Communicable Diseases at Boston City Hospital and part time Instructor in Communicable Diseases, Faulkner Hospital School of Nursing, Jamaica Plains, Massachusetts during 1940-41; Resident Physician in Medicine at University of California Hospital 1941-42; Clinical Instructor in Medicine and Pediatrics at University of California School of Medicine and Clinical Instructor in Pediatrics at Stanford University School of Medicine during 1942-47; Assistant Clinical Professor of Medicine and Pediatrics (University of California) and Assistant Clinical Professor of Pediatrics (Stanford) 1947-51; William Watt Kerr Associate Professor of Clinical Medicine 1951-55 and Professor of Clinical Medicine (both at the University of California School of Medicine) 1955 to the present time. During 1942-51 he was also Physician in Charge of Isolation Division, Department of Public Health, San Francisco Hospital; 1948-56 Consultant in Infectious Diseases and Internal Medicine at University of California, Student Health Service; 1951-56 Chief of Medical Service at San Francisco Hospital; and August, 1956 to date, Chairman, Department of Medicine, University of California School of Medicine, and Physician-in-Chief, University of California Hospitals.



Henry D. Brainerd, M.D.

Doctor Brainerd is the author of numerous articles in the field of infectious diseases and chemotherapy.

The House of Delegates will meet Thursday and Saturday mornings, April 11 and 13, 1957, respectively (Stardust).

Council will hold its annual meeting Wednesday morning, April 10, 1957 (Stardust).

The Annual Corporation Meeting of Arizona Blue Shield is scheduled to meet Wednesday afternoon, April 10, 1957 (Stardust).

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SUED FOR SLANDER!

Before releasing the results of an employee's examination, be sure to get his permission in writing.

When an employer underwrites the cost of a pre-employment or periodic physical examination of an employee, he generally assumes that the findings of the examination will be submitted to him direct and that the employee's permission to do this need not be obtained beforehand.

This poses an ethical and legal problem sometimes overlooked by the examining physician.

By reporting to an employer the physical condition of an employee, without first securing the employee's approval, does the doctor violate either the patient's trust or the civil law of his State relating to confidential communications? In most cases the answer is that he violates both, as a result of which he therefore lays himself open to possible suit for slander.

Some medical men who do physical examinations may reason that when a worker submits to a checkup at the request of his employer, either to hold a job or to get one, he fully understands the purpose of the procedure. They conclude that in accepting this requirement of the employing organization, the employee gives tacit permission to the physician to submit direct to that organization the findings of his examination.

But is this a safe assumption? In event of litigation, will a court recognize such implied permission?

It may; or it may not. In any case, it is obviously wiser for the physician to protect himself fully by actually obtaining the patient's consent in writing.

The following waiver form, used or modified to suit individual needs and used routinely in mimeographed form, is hereby submitted:

"The undersigned grants permission and requests Dr.....to convey full information to.....(employer) about the results of a physical examination of the undersigned on.....(date), and waives on behalf of himself and any other person who may have an interest in the matter all provisions of law relating to the disclosure to.....(employer) of information acquired thru the aforesaid examination."

Signature of person examined.....
Date. Witness

Such a form, properly executed and signed by the employee, constitutes comfortable and tangible assurance for the examining physician that he will not be the unfortunate recipient of a court judgment at some future date.

Admittedly, the risk of a suit for slander is not great. Yet it is always a possibility. So why take a chance?

J. D. Hamer, M.D., Chairman
Medico-Legal Committee

SOCIAL SECURITY — R.H. 7225

The President of the United States signed into law the Social Security Amendments of 1956 (H.R. 7225) on August 1. The amended law now lowers the retirement age of women as specified from 65 to 62, and authorizes cash disability benefits for workers from age 50 upwards, if they become permanently and totally disabled. The Senate, even tho its Finance Committee after prolonged study and hearings did not report the bill out favorably, passed it, with these amendments, just before adjournment, by a narrow vote of 47 to 45. The Republican Senator from Arizona voted against the law with its amendments, while the Democratic Senator voted aye.

As amended by the Senate, and concurred in by a conference committee with the House, the Law sets up a Disability Insurance Trust Fund as an entity separate from the Old-age and Survivors Insurance Trust Fund. Beginning Jan. 1, 1957, it increases Social Security taxes by ¼ percent each on employers and employees, and ⅜ percent on the self-employed, wherein the law as originally written would have increased the taxable rate at ½ percent more on each contributor. This law also extends Social Security coverage to about 600,000 additional farm owners and operators, and about 225,000 self-employed lawyers, dentists, and others. So far, doctors of medicine are excluded. The aggregate tax increase next year is expected to yield approximately \$850,000,000.

Until or unless new regulations are issued, doctors will follow the same procedure in connection with this new Law that they followed under the disability freeze amendments now in effect, and passed in 1954. The physician will make his medical findings on a prescribed form, and turn in his report to the State Agency in

charge, usually the Office or Department of Rehabilitation or Social Security as designated in each district. The decision as to disability of any applicant is then made by the Agency, based on the vocational and medical findings, as to the applicant's disability, and benefits.

We physicians wonder now. Is this it? What is next on the agenda? Are we to be lassoed next? One wouldn't be surprised, whether the majority desired this type of compulsory taxation or not. We have felt for a long time, and have lifted up our voices en mass in Washington along with many other socialistic fearing souls, that there is grave danger in the enactment of these Sections of the Social Security Act; an act authorizing the Federal Government to initiate a cash disability insurance program. Restricted, of course, for a starter, but the first of other all-encompassing measures that are on the agenda in future Congressional Sessions which will eventually lead directly and rather quickly to the complete nationalization or socialization of medical practice.

Obviously, with the dozens of witnesses appearing before the Senate Finance Committee in open hearings on this Bill last spring, representing many professions, businesses, and others representing large segments of our population, have continued to fail in their endeavor to discover methods to make their opinions and wishes felt before Congress in this Democracy of ours. Loud and extended protests on the part of some segments of the populace have failed again. Thousands of wires and letters must have reached Washington and the White House urging defeat or veto of these amendments.

Why did the President sign this Bill into Law? No simple analysis can set forth all the forces which played a part in his willingness to endorse this Social Security bill, sponsored by the Democrats. This, in spite of the fact that two of his own Cabinet members, Secretaries Hobby, and more recently, Mr. Folsom had testified against adoption of H.R. 7225. From a review of the statements made in connection with signing this Bill, one gathers very plainly that he signed it because he was wholeheartedly in favor of its provisions, and what it was designed to accomplish.

The medical profession, among others, are now caught in a skillfully managed social revolution. After defeat of the National Compulsory Health Insurance Acts of 1945, and again in 1947-48, tactics had to be changed in 1950. The piecemeal approach to the same end-result was adopted, so that Congress enacted in 1950, 1952, 1954, bills and amendments, to the preceding Laws, which paved the way for the Disability Insurance set-up. And the President has signed H.R. 7225 into Law.

One wonders whether this is now the time to succumb completely to despair? You doctors had better sharpen your pencils, and begin practicing up a bit on your penmanship, so all the Federal employees can read your writing. Better begin to look around for a Union to join, then get your Social Security Card, and take your place on the payroll of a Socialistic Dictatorship. Time's a-wasting, and it may be sooner than you think.

J. D. Hamer, Chairman
Committee on Legislation

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Notes From Desk Of The Executive Secretary

U. S. INTERNAL REVENUE — REGULATION POSTGRADUATE "REFRESHER" COURSES

EXPENDITURES DEDUCTIBLE

The U. S. Internal Revenue Service has issued a regulation which is important to physicians.

Efforts over a long period of time by the A.M.A. Law Department to get the Internal Revenue Service to issue a regulation permitting physicians to deduct their expenditures in taking postgraduate "refresher" courses have finally paid off.

The regulation, effective on August 9, provides that expenditures for education are deductible if they are for a "refresher" or similar type of course taken to maintain the skills directly and immediately required by the physician in his employment or business. An educational course to be covered should be designed for established medical practitioners to help them keep abreast of current developments in the profession; it should be of short duration; it should not be taken on a continuing basis, and should not carry academic credit. Education designed to prepare the practitioner to enter a specialty will not be acceptable.

When a physician travels away from home primarily to obtain "refresher" education, his expenditures for travel, meals, and lodging while away from home are deductible. However, expenses for personal activities such as sightseeing, social visiting or entertaining or other recreation will NOT be allowed.

The Social Security bill (H.R. 7225) now is the law of the land — Public Law 880 of the second session, 84th Congress. We are printing in full the statement issued by the President when he signed the bill, so you will know his position and his reasons for taking the action. Increased OASI taxes to support payments to the disabled at age 50 become payable on January 1, 1957. Disability benefits become payable on July 1, 1957. Until and unless new regulations are issued, doctors will follow the same procedure in connection with this new law that they follow under the disability freeze amendment now in effect. The physician makes his medical findings and turns in his report to the state agency in charge, usually the office or department of rehabilitation. The decision then is made by the agency, based on voca-

tional as well as medical findings, as to the applicant's disability.

Following is the complete text of a statement issued by President Eisenhower August 1 when he announced he had signed the social security bill, H.R. 7225:

"I have today signed H.R. 7225, the Social Security Amendments of 1956. The new law embraces a wide range of changes in old-age and survivors' insurance, the public assistance programs, and child welfare services.

"This Administration's strong support of the social security program was demonstrated by the broad expansion and improvements enacted in 1954 at my recommendation. The 1954 Amendments, which extended coverage of the program to millions of additional persons and included higher benefits for all who were then or who would become beneficiaries, have had a major impact in bringing greater security to our people.

"The new law also contains certain major provisions which were recommended by the Administration. It extends social security coverage to about 600,000 additional farm owners or operators and about 225,000 self-employed lawyers, dentists, and others.

"It provides for increased Federal funds to encourage better medical care for the needy aged, blind, disabled, and dependent children. This will help meet a critical problem for these groups.

"Another Administration proposal placed increased emphasis, in public assistance programs, on services to help more needy people build toward independence. The law initiates new programs of grants to train more skilled social workers and to support research in ways of helping people overcome dependency. Another Administration proposal will increase funds for child welfare services.

"The law also includes provisions about which the Administration had serious reservations in their initial form; these provisions were modified and improved before their final enactment and now meet, in part, some of the Administration's objections.

"The original proposal to lower the retire-

ment age for all women was changed to provide that employed women and wives may accept reduced benefits at an earlier age or obtain full benefits at age 65. I am hopeful that this provision will now have no adverse affect on employment opportunities for older women. The law allows full benefits at age 62 for widows because of their special needs.

"Congress also modified somewhat the original proposal to provide disability benefits at age 50 or above. A separate trust fund was established for the disability program in an effort to minimize the effects of the special problems in this field on the other parts of the program — retirement and survivors' protection. We will, of course, endeavor to administer the disability provisions efficiently and effectively, in cooperation with the States. I also pledge increasing emphasis on efforts to help rehabilitate the disabled so that they may return to useful employment.

"The original proposal would have imposed a 25 percent increase in social security taxes on everyone covered by the system. I am pleased that the tax increase has now been cut in half. Our actuaries report that while they cannot estimate costs of the disability program with certainty, the tax increase should be adequate to finance the benefits, assuming effective administration.

"Although there were differences of opinion over separate provisions, the final legislation was approved overwhelmingly by Congress. In signing this legislation, I am hopeful that this new law, on the whole, will advance the economic security of the American people."

THE RECORD

The Congressional Record of July 18, 1955, page 9304, shows that Representative Rhodes VOTED FOR passage of H.R. 7225, and that Representative Udall did not vote but was paired with Mr. Crumpacher of Indiana. This was a "general pair," therefore it is not possible to ascertain whether or not Mr. Udall favored passage. In any event, none of our Representatives positively opposed passage of this bill. You will recall the House of Representatives by a roll call vote of 372 to 31 under a procedure (suspension of rules) barring amendments, limiting debate to forty minutes and requiring a two-thirds vote of approval, passed the measure. A handful of men (House Ways and Means Committee) wrote the bill in secret,

denied citizens the right to express their views, demonstrating disrespect and distrust of their House colleagues, and under such gag procedure denied adequate debate or floor amendment.

The Senate Finance Committee conducted public hearings on the House Bill from January 25 through March 22, 1956. The committee heard 101 witnesses, and a preponderance of them (including AMA spokesmen and the Eisenhower Administration) opposed disability payments. The Senate on July 17, 1956, voted to include a program of payments to the disabled at age 50. The first roll call vote on such disability payments was 47 to 45, Senator Hayden VOTING FOR and Senator Goldwater VOTING AGAINST inclusion thereof. On the roll call vote to "reconsider" immediately following the first vote, there were 49 "Yeas" and 43 "Nays," Senator Hayden VOTING FOR and Senator Goldwater VOTING AGAINST the disability amendment.

AMERICAN CANCER SOCIETY

NASHVILLE, TENN. — A "radioactive curtain" destroys cancer crumbs spilled during surgery.

This finding by Dr. Horace Goldie of Meharry Medical College has been reported by the American Cancer Society which supports the research.

While Dr. Goldie's studies were with mice, the results strongly suggest that radioactive substances used prophylactically in humans might prevent some recurrences of cancer following surgery.

Dr. Goldie found that a high percentage of mice whose tumors were removed surgically had recurrences due to the spillage of cancer cells into the operative wound. There were far fewer recurrences, on the other hand, among mice treated with radioactive substances at the time of surgery. The radioactivity killed the spilled cancer cells.

The Meharry scientist has poured radioactive yttrium or phosphorus into the wound at the time of operation. These substances, in fluid or colloidal form, bathe the wound and destroy cancer crumbs left at operation.

The radioactive flood also seeps into the lymphatic vessels used by escaping cancer cells and overtakes and destroys some of the cancer

cells. If the cells have spread to distant parts of the body, however, the radioactivity cannot overtake them.

In these studies several types of tumors were used, including cancers which grow in the form of single cells suspended in body fluids.

The radioactive substances used produce a variety of rays — long, far reaching gamma particles which are effective for several yards and narrow ranged beta radiation which strikes only the nearest cells. He has found that phosphorus can be used in the form of insoluble chromic phosphate in higher doses than gold. Phosphorus produces only beta rays; gold radiation is 95.3 per cent beta and 4.7 per cent gamma.

Yttrium has the advantage of remaining in tissues until its radioactivity — effective for about 10 days — is spent. Moreover, a large part of the yttrium applied around tumors creeps inside the tumors and destroys them.

Dr. Goldie and his associates have been able to completely destroy tumors by inserting a radioactive curtain between the tumors and adjacent healthy tissues. This cut off the supply routes to the tumors and starved them. Surgery was simpler and quicker, however; and in these experiments the most effective treatment of mouse cancer was to remove the tumor surgically and use radioactivity prophylactically.

He now is seeking radioactive materials which will track down and destroy cancer cells regardless of where they are in the body.

The scientist has likened cancer to dandelions. If dandelion growths are discovered early they can be extirpated. If they are dug up but root tips are left, they will regrow. The cautious gardener covers the plumaged tops with a handkerchief to prevent the escape of a cloud of seeds.

Early detection, radical surgery and radioactive curtains are parallel precautions to be taken in treating cancer, he states.

BLUE SHIELD

In June all Arizona Blue Shield Participating Physicians received a communique from G. Robert Barfoot, M.D., president of Blue Shield. The letter carried the caption "It's In The Mill," and its contents are so important to the medical profession as a whole that we thought

it might be sagacious at this time to repeat the letter's full contents:

Will be very brief. Thought you should know these things are coming:

1. Surgery in the doctor's office and minor surgery in the outpatient department of the hospital.

2. Diagnostic radiology and pathology coverage for non-hospitalized cases.

3. Additional charge may be made by Participating Physicians to under income subscriber if he has other coverage for the same services in addition to Blue Shield.

4. Payment of additional fees to assisting surgeons in major surgical procedures.

5. Re-evaluation of present fee schedules.

6. Joint commission to investigate desires of Participating Physicians.

These things cannot be put into operation immediately because actuarial study, committee work, legal review, new administrative procedures, and notification of subscribers are involved. However, we will act as quickly as possible and all of them should be completed this year.

In the interest of economy and good public relations, we will try to start most of these things at one time so that notification to you and Blue Shield subscribers can be handled on a "package" basis.

YOU WILL BE NOTIFIED WHEN ANY CHANGES BECOME EFFECTIVE. IN THE MEANTIME DO NOT MAKE ANY CHANGES IN YOUR REGULAR BLUE SHIELD PROCEDURE OR WE MAY BE SUBJECT TO SUIT FOR BREACH OF CONTRACT.

Send us your suggestions and comments — they will be given every consideration in trying to make improvements in your Plan. Since this letter went out, many of the committees have made definite progress on their assigned projects, and much of the thinking regarding the above six points is crystallizing.

ALL CAN PARTICIPATE

Many doctors have inquired as to whether or not they are eligible to participate in the Blue Shield In-Hospital Medical program and provide medical care for Blue Shield members. Any Arizona Blue Shield Participating Physician (and there are over 800 of them) is eligible to receive payment under the Plan for rendering In-Hospital Medical care to the Blue Shield patient.

Woman's AUXILIARY

NURSE RECRUITMENT PROGRAM

The Nurse Recruitment Program in Pima County for the year 1955-56, was highlighted by the fashion show of student nurse uniforms by the Medical Minors Club (Future Nurses Club) of Amphitheatre High School. This show was presented on December 6th to students and their parents interested in nursing. Invitations were extended to the high schools in Tucson. It was shown again on December 12th at the Nurse Recruitment program for the Auxiliary of the Pima County Medical Society.

The Fashion Show was conceived as a vehicle for conveying information to the public about nursing as a career. The Show was commented by Mrs. Leo Kent and the uniforms were modeled by members of the Amphitheatre group.

Mrs. Kent gave a short history of nursing and uniforms representing historical eras were modeled as a contrast to the crisp, efficient uniforms of today. Student nurse uniforms of 8 Schools of Nursing throughout the United States were shown. The commentator directed an informal discussion by the models on the need for nurses, admission and financial requirements, curriculum, types of education available, health programs and student activities. The uniformed Freshman Choir from St. Mary's Hospital School of Nursing made the meeting most impressive by their rendition of choral selections.

The script for the panel discussion was prepared by the State Nurse Recruitment committee chairman, Mrs. D. N. McLeod, Pima County chairman, Mrs. Arthur Dudley, and the students of the Medical Minor group. Informal discussion with the parents by the committee during a refreshment hour cleared up many questions and served to establish a link with the parents for further consultation.

The Nurse Recruitment committee for Pima County included Mrs. Arthur Dudley, chairman, Mrs. D. N. McLeod, ex-officio, Mrs. Sherwood Burr, Mrs. Francis Bean, and Mrs. Robert Pfundt.

The Open House at St. Mary's Hospital during Nurse Recruitment Week was planned by the joint committee on Careers (Recruitment committees from the Auxiliary and the State Nurses Association) and Sister Helen Frances.

"The Life of a Student Nurse" was discussed by students from St. Mary's, each in a different phase of training. Enthusiasm was great and many questions came from the audience of future nurses. The movie "Trek of Seven Sisters" was shown, followed by a tour of St. Mary's Hospital. The approximately 150 girls who attended from Tucson and from cities in the southern part of Arizona felt that they had gained a far better insight into nursing as a career.

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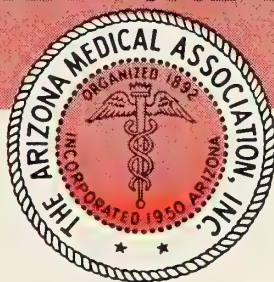
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ARIZONA MEDICINE

Journal of ARIZONA MEDICAL ASSOCIATION

VOL. 13, NO. 11



NOVEMBER, 1956

TABLE OF CONTENTS

| | |
|----------------------------|-----|
| OFFICERS DIRECTORY | 6A |
| INDEX TO ADVERTISERS | 55A |

ORIGINAL ARTICLES

| | |
|--|-----|
| SOME RECENT DEVELOPMENTS IN RABIES CONTROL | 459 |
| Hugh H. Smith, M.D., Tucson, Arizona | |
| THE LOCALIZATION OF OBSCURE GASTROINTESTINAL BLEEDING | 467 |
| Arie C. van Ravenswaay, M.D. | |
| BLOOD AMMONIA LEVELS IN CONGESTIVE HEART FAILURE | 470 |
| Drs. W. Graham Calkins and Mahlon Delph, M.D., Kansas City, Kansas | |

MEDICAL PROBLEMS

| | |
|---|-----|
| PHOENIX CLINICAL CLUB | 478 |
| Ben P. Frissell, M.D., Phoenix, Arizona | |

THE PRESIDENT'S PAGE

| | |
|-----------------------------------|-----|
| ARIZONA MEDICAL ASSOCIATION | 484 |
|-----------------------------------|-----|

EDITORIALS

| | |
|----------------------------------|-----|
| POLICY | 485 |
| TOBACCO AND CANCER | 485 |
| ORAL TREATMENT OF DIABETES | 486 |

TOPICS OF CURRENT MEDICAL INTEREST

| | |
|--|-----|
| RX., DX., AND DRS. | 488 |
| Guillermo Osler, M.D. | |
| COUNCIL ACTION | 487 |
| THE HISTORY OF MEDICINE — Geo. Emery Goodfellow, M.D. | 494 |
| ANTIDOTE AGAINST NERVE GAS | 497 |
| TRANQUILIZING DRUGS | 497 |
| NOTES FROM DESK OF THE EXECUTIVE SECRETARY | 498 |
| THE TEN LEADING CAUSES OF DEATH — ARIZONA — 1955 | 498 |
| 1957 ANNUAL MEETING — Leon Goldman, M.D., San Francisco, Calif. | 500 |
| AMERICAN MEDICAL ASSOCIATION | 500 |
| 1957 CANCER SEMINAR | 501 |
| SERVICE POLICY — ARIZONA DIVISION — AMERICAN CANCER SOCIETY | 501 |
| SOCIAL SECURITY | 504 |
| BOARD OF MEDICAL EXAMINERS — STATE OF ARIZONA | 508 |
| ARIZONA BLUE SHIELD | 509 |
| THE PHYSICIANS FORUM | 509 |
| ARIZONA MEDICAL ASSOCIATION INC., — LOCATION OPPORTUNITIES | 510 |
| COUNTY - STATE - NATIONAL - MEDICAL SOCIETY MEETING CALENDAR. | 511 |

WOMAN'S AUXILIARY

| | |
|---|-----|
| CIVIL DEFENSE — WHAT TO DO IN CASE OF AN ENEMY ATTACK | 516 |
|---|-----|

DIRECTORY

| | |
|----------------------------|-----|
| LABORATORIES | 47A |
| DRUGGISTS DIRECTORY | 49A |
| SANATORIUM DIRECTORY | 50A |
| PHYSICIANS DIRECTORY | 52A |

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SOME RECENT DEVELOPMENTS IN RABIES CONTROL

By Hugh H. Smith, M.D., M.P.H.

Tucson, Arizona

RABIES in man is an invariably fatal disease, but fortunately the number of individuals dying of the disease is quite small. In the United States of America in the period between 1949 and 1954, the annual reported deaths from rabies have varied from 10 to 24 per year. These figures give little account, however, of the heavy toll exacted by rabies in the form of large sums expended for (1) human immunizations, (2) cost of services to investigate animal bites, (3) quarantine measures and stray animal collections, (4) laboratory and administrative services, and (5) loss of livestock and valuable pets. This takes no account of the anxiety and suffering of the thousands of persons and their families who annually undergo prolonged courses of vaccine treatment due to exposure to rabies infection. When all these considerations are taken into account, rabies must certainly be included among the major problems of those concerned with protecting the health of human and animal populations.

EPIDEMIOLOGY

There are two epidemiological types of rabies — the natural disease as it occurs in wild animals and the urban type which is maintained in domestic dogs.(1) The virus is often present in the saliva of rabid animals and consequently is most commonly transmitted by a bite. Under favorable conditions the virus when introduced into a wound becomes established in nerve tissue and migrates to the brain where, after an incubation period of from ten days to several months, it produces an acute, highly fatal encephalitis. The probability of human infection is dependent upon the concentration of the virus

in the saliva of the biting animal; the site of the bite on the body (bites on the head, neck, and face are the most dangerous; the hands, feet, arms, and legs are next in importance; and on the trunk least dangerous); the depth of the bite; the multiplicity of the bite; and the possible interposition of clothing.

Rabies is endemic throughout most of the U.S.A. The intensity of infection varies from area to area depending on the density of wild-life populations and on the efficiency with which control programs are maintained. The situation is well illustrated by the outbreak of an epizootic of rabies that began in New York State in 1943.(2) In Table I, the annual reported incidence of rabies in New York State from 1943-1947 is given. The disease increased during this period markedly in foxes and in cattle, but decreased sharply in dogs due to mass immunization campaigns. The infection was still being frequently encountered among foxes and cattle after rabies in dogs had subsided.

Some idea of the extent of the rabies problem in Texas can be gained from a study of the data summarized in Table II.(3) With the extensive prevalence of rabies as indicated by these figures, it is not surprising to learn that in 1953, 2,675 fourteen-injection human rabies treatments were supplied to physicians for administration in Texas.

Recently in California, skunks have been commonly affected with rabies infection among the wild animals, while dogs were by far most frequently attacked by rabies among the domestic animals. Thus of a total of 425 reported cases of animal rabies in California during 1955,

246 were among dogs and 141 among skunks.(4)

In Arizona, the last human case of rabies reported to the Health Department was that of a three year old child from Yuma. This case occurred three years ago.(5) The incidence of rabies among animals in this state appears to be low according to the data given in Table III.(6) Most cases of rabies in wild animals in Arizona have occurred in the low-altitude areas of the southern counties and have been discovered among coyotes, skunks, foxes, and bobcats. Cattle, too, have been frequently affected. Since animals are seldom submitted for examination in the laboratory unless they have approached residences, usually during the day, and have attacked domestic animals or humans, it seems obvious that the actual level of rabies infection among wild animals is much higher than is reported.

In recent years, interest has centered around the possible role of bats in the epidemiology of rabies. In the Americas, there are three general groupings of bats. Based upon feeding habits, they are: the carnivorous or blood-lapping vampire (*Desmodus sp.*); the fruit eating (*Artibeus sp.*); and the insectivorous. The insectivorous bats are further grouped as colony bats (*Tadarida sp.*) which congregate and live in caves, attics, and belfries; and the free-living bats (*Lasiurus sp.*) which live singly in trees and bushes. In the New World, the vampire and fruit-eating bats are confined to Latin America.

It has long been known that rabies is common among and transmitted by the bite of vampire bats. In 1908, ranchers in southern Brazil observed that bats were attacking and biting livestock in the daytime and that animals thus bitten soon died of a paralytic disease. Some years later, some of the cattle affected with this disease were proved to be infected with rabies virus and shortly thereafter rabies virus was isolated from vampire bats in that area. In 1925, a similar situation was reported in Trinidad, B. W. I. Several thousand cattle died and 55 fatal human cases occurred. All of these were thought to have been infected by the bites of vampire bats. In Mexico, outbreaks of a paralytic disease in cattle have been observed in the west central states for more than 40 years. During a field study in the state of Michoacan in 1944, rabies virus was isolated from a paralyzed cow and from the salivary glands of vampire bats captured in a cave

nearby.(1)

Rabies in vampire bats may manifest itself in the classical furious or paralytic type common to all mammals. These bats may recover, but more usually they die. Some bats after infection develop a carrier state without exhibiting any evident illness. How long the naturally infected bat may live and act as a carrier is not known, but it appears probable that it may be for many months.(7) Living together as they do in large colonies in caves, there is abundant opportunity for the maintenance of the infection in the colony for long periods of time and for passing the virus to other bats.

Vampire bats have a wide range extending from Argentina to Central America and Mexico. There is good reason to believe that their distribution now encompasses a far greater area than it once did, favored by an increase in the cattle population. Thus far, the nearest locality to the U. S. border where vampire bats have been found is Guadalupe Cave near Linares, Nuevo Leon, only 100 miles from the frontier.(7)

Among bats, rabies is not limited to vampires. At least seven other species have been found infected in nature. The first positive report of bat rabies in this country came from Florida in 1953 when Negri bodies were found in the brain of a Florida yellow bat which had attacked a child. Later, rabies virus was isolated from the brains of five additional Florida yellow bats and from one Seminole bat. These two species are non-colonial, insectivorous bats, indigenous to the southeastern United States.(8)

A few weeks after the Florida report, rabies virus was recovered from the brain of a bat, identified as probably the red hoary bat (*Lasiurus cinereus*), which had attacked a woman in Pennsylvania. This bat is of the migrating type, going probably to central Mexico for the winter months.(9)

In 1954, rabies virus was obtained from the brain of a sick bat found in a flower bed in Montana. This bat was identified as belonging to a large insectivorous species common to western U. S. A. (*Eptesicus fuscus pallidus* Young). It is not known to migrate, but hibernates in caves.(10)

Strenuous efforts have recently been made to study the relationship of bats to the rabies problem in several states. In Texas, interest has been focussed on the Mexican free-tailed

bat (*Tadarida mexicana*). The caves of central Texas harbor millions of these bats living in huge colonies, many of which migrate to Mexico in the cold season. Consequently exchange of infection between these insectivores and the vampires is an ever-present possibility. During a two-year study, some 2,000 bats have been tested for rabies infection in Texas. Bats of ten different species were among those tested. Rabies virus was repeatedly found in the brains and salivary glands of the Mexican free-tailed bat. The only other species found infected was a single specimen of the "red bat" (*Lasiurus borealis*). (11)

In the caves harboring bat colonies, evidence was found that at certain seasons raccoons and other predatory animals feed on bats, especially on those which have fallen to the cave floor. This intimate contact between carnivorous animals and infected bats provides a hypothetical mechanism for the passage of rabies infection in nature. (12)

Another study of bat rabies has been carried out recently by officers stationed at Brooke Medical Center, Fort Sam Houston, Texas. A total of 1,247 bats representing nine species were collected from Texas, Arkansas, Louisiana, New Mexico, and from several points in Old Mexico. Virus was discovered in the brains of the free-living species (*Lasiurus borealis borealis* and *Antrozous pallidus pallidus*) in Texas, as well as from *Tadarida brasiliensis mexicana* and *Myotis velifer incautus* in New Mexico and Texas, and from *Tadarida brasiliensis cynocephala* in Louisiana. (13)

In California in the summer of 1956, two instances of bat rabies have been reported. One was in a hoary bat (*Lasiurus cinereus*) killed while attacking a dog in Shasta County, and the other a bat of the genus *Myotis*, species unidentified, killed when attacking a boy in Santa Clara County. Both bats were proved to be rabid by laboratory examination. (4)

It would appear from these studies that rabies is widely prevalent among bats in this country, but a great deal of investigation remains to be done before the epidemiological role of bats in rabies can be properly assessed. Since it is clear that bats may harbor rabies virus and yet show no signs of illness or abnormality of habit, any bite inflicted by a bat, molested or otherwise, should be considered as possible exposure to rabies virus.

Even though only fragmentary information is available, it would appear that bat colonies may serve as the true reservoirs of rabies virus. From these reservoirs, infection may spill over periodically into wild animals, either infected by the bites of rabid bats or from the eating of bats carrying virus. Once introduced among coyotes, foxes, and other carnivores, rabies sweeps through the animals in the bush, the intensity of the epizootic depending on the density of the animal population. Livestock and pets on ranches, in farm yards, and in towns may be infected by contact with rabid wild animals. Domestic dogs revert easily to the semiwild state and stray dogs increase rapidly in any urban community unless there is an organized effort to destroy them. The propagation of rabies in dogs is dependent to a large extent on the presence of many stray dogs in urban communities.

CONTROL MEASURES

At the present time, control of rabies among wildlife in situations where the disease exists at low levels or on an endemic basis seems impracticable. When sharp outbreaks or epizootics occur, well-organized campaigns for the reduction of excessive numbers of wildlife vectors should be undertaken. Such outbreaks are usually associated with high densities of vector populations, and the objective should be to bring the number of animal vectors down to a level that would no longer support the rapid spread of the disease. These programs should be directed by experienced men, expert in the techniques of trapping, shooting, gassing of dens, and in the use of poisons.

Control programs should be set up on a state-wide basis and coordination of activities is essential for success. Whenever possible, a well-trained veterinary officer should be given responsibility for the administration of the state program.

The attack against an infectious disease like rabies must necessarily depend upon adequate facilities for rapid and accurate diagnostic procedures. Personnel experienced in the techniques for demonstrating Negri bodies in brain specimens and in virus isolation by animal inoculation should be available in State Public Health Laboratories. The importance of animal inoculation tests for the isolation of virus from suspected brain tissue in Negri-negative specimens cannot be overemphasized. Extensive studies

have shown that in large series of routine specimens submitted for diagnosis that 10-15 per cent of these cases proved positive by mouse inoculation had been missed by direct microscopic examination for Negri bodies.

Local rabies control functions best on a county-wide basis. These programs must include: (1) Mass immunization of dogs with the objective of vaccinating at least 70 per cent of the dogs in every town. (2) Elimination of all stray dogs. These ownerless animals should be collected and held for a few days at the local pound or animal shelter. If unclaimed, the strays should be destroyed in a humane manner. (3) A licensing system for all dogs; if properly enforced, this system aids in the identification of ownerless dogs and helps to defray the expenses of the control campaign. (4) Quarantine of animals known to have been bitten by rabid or suspicious beasts; since the incubation of rabies is often prolonged, these animals must be kept under observation for at least three months.

Employment of the measures outlined above has repeatedly given rapid and satisfactory reduction in the incidence of rabies among dogs in affected communities. Even by the use of inactivated nerve-tissue vaccine, which confers immunity to dogs for a period of about one year, good results were obtained. Now that the living chick-embryo vaccine (Flury strain) is available, control results are even more satisfactory. This vaccine gives good protection to dogs for at least three years. All dogs three months of age and older can be effectively immunized by a single inoculation of this product. Many reports of the successful reduction of rabies among the dog population of American communities have been published. Recently, the results of two dramatic demonstrations of the efficacy of this control method on a national basis in Malaya and in Israel have become available.(14), (15)

A most important aspect of any successful rabies control program must be the education of the public. Unfortunately, people are inclined to be indifferent, or all too often in the case of pet owners, to be belligerent toward a rational plan to immunize the dog population. It is only through an understanding of the whole problem that people can be persuaded to cooperate with the health authorities on a continuing basis to keep rabies down to a minimum

level in the community. Probably more can be done through the efforts of veterinarians than by any appeal based primarily on the human aspects of the problem. Of course, the public should also be warned about avoiding wild animals that appear ill or whose behavior is abnormal.

PREVENTION OF HUMAN RABIES

Infection from the dog or domestic cat accounts for all but 1-2 per cent of human infections. The first line of defense, therefore, is an effective campaign to render such pets immune to rabies by vaccination.

There are no satisfactory data available concerning the attack rate for rabies in man following exposure by the bite of a rabid dog. Since Pasteur first introduced his treatment in 1885, it has been the practice to give such anti-rabic vaccine to all persons exposed whenever possible. An indication of the overall attack rate in the untreated individual may be obtained from the data of Schuder who reported 1,325 deaths from rabies in 14,959 persons bitten by rabid animals (9 per cent) before vaccination therapy was available. Other reporters present a less optimistic picture. In southern India from 1946-1954, among 213 persons bitten by animals whose infectivity was proved by death from rabies of one or more of the persons bitten and who received a complete course of treatment with Semple vaccine 16 or 7.5 per cent died of rabies. At the same time, of 85 persons who remained untreated after a similar exposure, 36 or 42.3 per cent succumbed to rabies.(16) It would appear that man is relatively susceptible to rabies and under some conditions the attack rate is very high.

As for the diagnosis of the disease in man, one should bear in mind that some patients do not show the classical clinical symptoms. In such individuals, rabies is likely to be mistaken for fulminating poliomyelitis. The diagnosis in these cases can only be made by the laboratory after death or by the inoculation of saliva into the brains of laboratory animals.

In order to prevent the development of rabies in man following exposure, it is necessary to achieve the equivalent of intracerebral resistance. The immunity produced by a series of vaccine injections must be sufficient to stop the multiplication of the virus in the nervous system.(17) It requires 3-4 weeks to develop maximum immunity after beginning the post-ex-

posure vaccine treatment, as determined by the rate of development of virus-neutralizing antibodies in the blood. In cases of severe bites, especially around the head, the incubation period in man may be short, sometimes less than two weeks, so the vaccine treatment may not prevent the development of rabies. Most of the failures of vaccine to protect come in this category.

Since Pasteur's original vaccine prepared from infected spinal cords of rabbits dried in jars containing potash, many other types of vaccine, containing both active virus and virus killed by various methods, have been introduced. It was not until the white mouse became available as an experimental animal that the immunizing potency of rabies vaccines could be accurately tested. Now all rabies vaccines marketed in this country must be tested for immunizing potency according to a method developed by the U. S. Public Health Service.(18) The vaccine most commonly used now in the U. S. A. is the Semple type. It is packaged in 14 doses of 2 cc. each of a 4 or 5 per cent rabbit brain suspension in saline solution containing 0.25 per cent phenol. The usual treatment consists of 14 daily injections of 2 cc. of vaccine, given subcutaneously in the abdominal wall.

In addition to occasional failures of the vaccine to protect on account of an unusually short period of incubation of the disease, there is danger of sensitizing to rabbit-brain tissue which sometimes produces serious allergic reactions. Paralytic phenomena, as often as 1 in 600 in some reported series, may follow the administration of rabies vaccine. These reactions include peripheral neuritis, dorso-lumbar myelitis, and paralysis of the Landry's type. Some of these paralytic cases are fatal, but more often they recover either fully or with some residual disability.

In a recent study, Koprowski and LeBell(19) demonstrated complement-fixing antibodies against rabbit-brain tissue in 50 per cent of the sera of a group of persons who had received a course of 14 inoculations of Semple-type vaccine. Those receiving only seven inoculations developed little or no such antibody. In three individuals with post-vaccinal neurological complications, the anti-rabbit brain antibody titres were particularly high.

With these two disadvantages of conventional anti-rabies vaccines in mind, i.e., failure to pro-

duce immunity rapidly and the danger of post-vaccination reactions, work has gone forward on studying the possibility of using prophylactic immune serum in the treatment of persons exposed to rabies. A concentrated hyperimmune serum produced in horses is now available commercially. Experimental work has definitely shown the superiority of this hyperimmune serum, especially when combined with a course of vaccine inoculations, over vaccine alone in the treatment of animals infected with rabies virus.(20) As the antibodies in the serum provide immediate passive immunity, use of the serum is recommended in severe bites, especially around the head, or in persons bitten badly by wild animals. It seems probable, too, that with the use of the serum, the number of doses of vaccine can be reduced to perhaps seven. Experience in this direction is being obtained in several states.

Since the anti-rabies serum is prepared in horses, it is necessary to test each patient for sensitivity before the serum is administered. If sensitivity is encountered and the need for using serum is imperative, the usual measures to desensitize the patient must be carried out. The recommended dose of serum is 0.5 cc. per kilogram of body weight. In cases of very severe exposure, larger doses of serum are indicated. In a series of 32 patients who received hyperimmune serum in Alabama, eight developed serum sickness of varying intensity with the reaction being severe in three of them.(21)

Another attempt to improve the rabies vaccine has been in the direction of removing animal brain tissue by cultivating the vaccine virus in duck embryos. A fixed strain of rabies virus is injected into developing duck embryos to secure multiplication of the virus. After a few days of incubation to provide for maximum growth, the virus is harvested and the vaccine prepared from the duck-embryo tissue.(22) So far, experience with this type of vaccine is not sufficiently advanced to permit judgment.

Perhaps the most significant advance in rabies research for many years has been the development of a living virus vaccine prepared from chick embryos, i.e., the Flury strain. This strain was isolated from the spinal cord of a young girl who died in Georgia after exposure to saliva of a rabid dog.(23) After prolonged passage from brain to brain in one-day old chicks, the virus strain was transferred to developing chick

embryos. Koprowski and Black(24) in 1950 found that virus material from the 40th-50th chick-embryo passage had become non-pathogenic for dogs when inoculated intramuscularly. A single injection of an appropriate dose of the chick-embryo virus resulted in good protection in dogs against subsequent inoculation of virulent strains of street rabies virus. The obvious advantages of this method of immunizing dogs were quickly perceived and the avianized Flury strain vaccine has been in general use for several years. As has already been pointed out above, the results of mass vaccination campaigns for dogs have been eminently satisfactory, and it is now known that immunity produced by this method endures for at least three years.

In the course of prolonged cultivation of the Flury strain in chick embryos, it was found that between the 172nd-174th passages the virus lost its capacity to produce fatal infection in adult mice, dogs, and rabbits even upon intracerebral inoculation.(25) This high-passage material was still antigenic in dogs and cattle upon the inoculation of a single dose intramuscularly. This virus material inoculated into the brain proved pathogenic for young mice 3-8 days of age, so there was still available a test animal for demonstrating the quantity of active virus present in any lot of this greatly modified vaccine.

The possibility of employing this high-passage Flury strain for human immunization soon came under consideration. After some preliminary experiments by Koprowski and his associates at the Lederle Laboratories, a group of research workers at Tulane University undertook to study the effects of the new vaccine in human volunteers.(26) Ninety-eight persons received from 1-10 intramuscular doses of chick-embryo virus containing material of between the 179th-181st passages. Each dose consisted of 2 grams of tissue suspension. No reactions of any consequence resulted from the vaccinations. Tests done on sera taken at intervals after inoculation of the vaccine showed that specific antibodies could be consistently demonstrated if vaccine had been given in sufficient quantities. Three doses of vaccine were usually sufficient to produce a good antibody level. Since such large quantities of the virus-containing tissue is required to stimulate immune response, it appears probable that there is no multiplication of the

virus following parenteral inoculation into the human.

Trials of the high egg-passage Flury strain for human immunization are continuing. Experience so far indicates that this method will be safe and useful. Some years will probably be required to collect enough evidence to provide an adequate basis to assess the proper place of this vaccine in the prevention of human rabies.

POST-EXPOSURE TREATMENT OF MAN
The Expert Committee on Rabies of the World Health Organization in its 1954 report(27) strongly recommends the immediate treatment of all bite wounds inflicted by animals, especially those suspected of being rabid, by thorough cleansing with soap or detergent solution. Such treatment does not preclude the subsequent use

TABLE I*
Reported Annual Incidence Of Rabies In New York State, Exclusive Of New York City, 1943-1947, By Species

| Year | Dogs | Cattle | Foxes | Human | Other | Total |
|--------|------|--------|-------|-------|-------|-------|
| 1943 | 176 | 10 | 1 | 0 | 2 | 189 |
| 1944 | 233 | 47 | 15 | 1 | 18 | 314 |
| 1945 | 503 | 87 | 50 | 1 | 22 | 663 |
| 1946 | 377 | 440 | 308 | 0 | 49 | 1,174 |
| 1947** | 40 | 167 | 218 | 0 | 31 | 456 |

*Taken from: Korns and Zeissig, Amer. J. Pub. Health, 1948, 38, 50-65.
**Through September 24.

TABLE II*
Reported Annual Incidence Of Rabies In Texas, 1948-1953,** By Species

| Year | Dogs | Cattle | Foxes | Skunks |
|------|-------|--------|-------|--------|
| 1944 | 863 | 24 | 3 | 1 |
| 1945 | 763 | 17 | 0 | 1 |
| 1946 | 1,004 | 29 | 16 | 15 |
| 1947 | 956 | 25 | 40 | 7 |
| 1948 | 1,203 | 48 | 75 | 73 |
| 1949 | 712 | 43 | 129 | 44 |
| 1950 | 863 | 61 | 160 | 43 |
| 1951 | 970 | 61 | 181 | 58 |
| 1952 | 1,009 | 51 | 161 | 74 |
| 1953 | 1,029 | 53 | 150 | 49 |

*Taken from: Irons, Eads, Sullivan, and Grimes, Texas Reports on Biology and Medicine, 1954, 12, 489-499.
**During this 10-year period, there were 29 human deaths from rabies in Texas.

TABLE III*
Rabies Positive Examinations Among Animals In Arizona, 1946-1955

| Year | Dogs | Other Animals | Total |
|-------|------|---------------|-------|
| 1946 | 11 | 10 | 21 |
| 1947 | 16 | 8 | 24 |
| 1948 | 20 | 3 | 23 |
| 1949 | 24 | 4 | 28 |
| 1950 | 22 | 2 | 24 |
| 1951 | 10 | 1 | 11 |
| 1952 | 7 | 4 | 11 |
| 1953 | 26 | 6 | 32 |
| 1954 | 24 | 6 | 30 |
| 1955 | 8 | 12 | 20 |
| Total | 168 | 56 | 224 |

*Examinations carried out by Laboratories of Arizona State Department of Health, Phoenix.

of strong mineral acids, such as nitric acid, which may be introduced into the depths of puncture wounds that cannot be reached satisfactorily with soap or detergents.

Because of the remarkably low mortality rate among treated persons, the committee recommends the use of vaccines for the prevention of rabies. Vaccine treatment should not be given, however, unless there is good evidence of exposure to rabies. As a guide to physicians, the W. H. O. Committee has prepared a statement summarizing the indications for specific post-exposure treatment.⁽²⁷⁾ In Table IV, these recommendations are reproduced.

SUMMARY

Although rabies now occupies a relatively

unimportant place among human diseases, it continues to be a major source of anxiety, and its presence in the country on an endemic basis results in large expenditures of money for control programs.

In recent years, rabies infection in bats has been found to be widely prevalent in many parts of the country. It appears that bats in colonies may be the true reservoir of the disease, as these animals sometimes harbor the virus for months without prejudice to their health.

Rabies occurs also among wild carnivores, such as coyotes, foxes, and bobcats, and presumably spreads from these animals to domestic pets.

TABLE IV*
Indications For Specific Post-Exposure Treatment

| Nature of exposure | Condition of biting animal | | Recommended treatment |
|---|--|--|---|
| | At time of exposure | During observation period of 10 days | |
| I. No lesions: indirect contact only | Rabid | — | None** |
| II. Licks: | | | |
| (1) unabraded skin | Rabid | — | None** |
| (2) abraded skin and abraded or unabraded mucosa | (a) Healthy | Healthy | None |
| | (b) Healthy | Clinical signs of rabies or proved rabid | Start vaccine at first signs of rabies in animal |
| | (c) Signs suggestive of rabies | Healthy | Start vaccine immediately; stop treatment if animal is normal on 5th day after exposure*** |
| | (d) Rabid, escaped, killed or unknown | — | Start vaccine immediately |
| III. Bites: | | | |
| (1) Simple exposure | (a) Healthy | Healthy | None |
| | (b) Healthy | Clinical signs of rabies or proved rabid | Start vaccine at first signs of rabies in animal |
| | (c) Signs suggestive of rabies | Healthy | Start vaccine immediately; stop treatment if animal is normal on 5th day after exposure*** |
| | (d) Rabid, escaped, killed, or unknown; or any bite by wolf, jackal, fox, or other wild animal | — | Start vaccine immediately |
| (2) Severe exposure; (multiple; or face, head, or neck bites) | (a) Healthy | Healthy | Hyperimmune serum immediately; no vaccine as long as animal remains normal. |
| | (b) Healthy | Clinical signs of rabies or proved rabid | Hyperimmune serum immediately; start vaccine at first sign of rabies. |
| | (c) Signs suggestive of rabies | Healthy | Hyperimmune serum immediately, followed by vaccine; vaccine may be stopped if animal is normal on 5th day after exposure. |
| | (d) Rabid, escaped, killed, or unknown. Any bite by wild animal | — | Hyperimmune serum immediately, followed by vaccine |

*Taken from: W. H. O. Techn. Rep. Ser., No. 82, 1954, 12.
**Start vaccine immediately in young children and in patients where a reliable history cannot be obtained.
***An alternative treatment would be to give hyperimmune serum and not start vaccine as long as the animal remained normal.
Note: To be effective hyperimmune serum must be given within 72 hours of exposure. Dose: 0.5 ml per kg of body-weight.
These indications apply equally well whether or not the biting animal has been previously vaccinated.

The vast majority of human cases occur from exposure to the bites of dogs and cats. The most effective method of preventing such cases is through concerted state- and county-wide campaigns to immunize dogs against rabies. Fortunately, a single dose of avianized vaccine produces a high degree of immunity in dogs that persists for at least three years.

In man, anti-rabic vaccine given after exposure sometimes fails to prevent rabies when the incubation period is short. These failures usually occur in persons with severe animal bites around the head and face. The use of hyper-immune serum to establish passive immunity soon after such exposures has been found to be effective.

Neurological complications are occasionally noted following the use of nerve-tissue rabies vaccines. To avoid the risk of such accidents, the use of immune serum with a reduced number of doses of vaccine is being advocated. Also research is going forward to produce chick-embryo vaccines for human use. Preliminary results with such an avianized vaccine are most encouraging.

Rabies in man is a preventable disease. Its control depends to a large extent on an educational campaign to acquaint the public with the essential aspects of the problem.

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THE LOCALIZATION OF OBSCURE GASTROINTESTINAL BLEEDING*

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THE PROBLEM of the management of obscure gastrointestinal bleeding is one that is constantly with the general practitioner, the internist, and the surgeon. Much has been written about it and much will continue to be written, because insofar as one can foresee it will always remain a problem and there will be no easy answer found either from the standpoint of localization or treatment.

The recent trend toward increased medical care confronts the internist with the responsibility for many patients with low grade hemorrhage from the gastrointestinal tract which previously would have been undetected. Similarly because of the increased availability of whole blood, many patients with recurring severe gastrointestinal bleeding who previously would have succumbed early in their illness, are kept alive as diagnostic problems. These trends present us with the increasing problem and responsibility of keeping the quality of our management of gastrointestinal bleeding abreast of the advances which have been made in other medical fields.

The purpose of this paper is to discuss methods of diagnosis which can be profitably used and to emphasize the importance of each physician developing a plan of management for cases of gastrointestinal bleeding which is positive in character. The answer to this over-all problem certainly does not lie in handing the X-ray man the problem of making the diagnosis or of passing it on to the surgeon when this does not produce the desired results.

At the present time diagnostic difficulties usually fall into two categories: (1) those cases in which the x-ray studies show no evident cause for the bleeding, and (2) those cases in which the x-ray studies show one or more possible causes and where the question exists if either or any of the possible causes is actually responsible. This latter situation frequently occurs in older age groups and one may literally

have four or five possible sources of the bleeding made evident by x-ray examination.

In trying to arrive at a diagnosis it is of great help to determine the level at which the bleeding is occurring. We approach this in many ways. From the standpoint of history is there anything to indicate a peptic ulcer? Is there a history of alcoholism? Is there a history of bleeding from other organs or in other members of the family which would suggest familial hereditary telangiectasis? Is there a history of hemophilia? Such facts may give suggestive and helpful information. In the physical examination one may find purpura, petechiae, or other evidences of blood dyscrasia. Abdominal scars may suggest previous surgical procedures for peptic ulcer. The stigmata of cirrhosis may be present and suggest the possibility of varices as a source of the bleeding. Careful examination of the nose, throat, teeth, and the rectosigmoid are often rewarding. The laboratory studies in addition to giving information relative to the amount of blood lost may also reveal evidences of blood dyscrasia, cirrhosis, uremia, or of syphilis.

All of the above information either in a positive or a negative sense is of value in arriving at a correct diagnosis. In most cases this information plus that derived by x-ray study will give a firm answer or a highly educated guess.

In those cases in which a satisfactory answer cannot be obtained from this approach, further localizing studies will be required. The type of such studies which will be most suitable in the individual case will depend upon whether the bleeding is coming from above the duodenal bulb, between the duodenal bulb and the ileocecal valve, or between the ileocecal valve and the rectosigmoid. If hematemesis is present the bleeding point is normally above the ligament of Treitz. However, there are frequent cases of bleeding from the esophagus, stomach, and duodenum in whom there is no hematemesis. The question "Do you vomit easily?" often gives some information in the evaluation of the sig-

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nificance of absence of hematemesis. The person who vomits easily will usually do so if a significant amount of blood is introduced into the stomach. A useful procedure in patients who are bleeding and who are not vomiting is to insert a tube into the stomach to observe the character of its contents. A positive finding of blood indicates bleeding superior to the jejunum. A negative finding, however, does not necessarily exclude bleeding below the stomach. A case of massive bleeding from a duodenal ulcer was recently seen in whom the gastric contents were entirely free of blood during the period of active bleeding. Careful examination of the character of the blood in the stool is of some value. While it is not possible to distinguish in this way between bleeding from the upper gastrointestinal tract and the proximal colon, blood that is streaked through a formed stool often indicates a source distal to the cecum. Blood on the surface of the stool only usually means bleeding from the rectum or sigmoid. Bleeding that accompanies a formed stool and continues after the completion of evacuation is usually anal in origin.

If one suspects on the basis of history, x-ray findings, hematemesis, or the proved presence of blood in the stomach, that the source of the bleeding is above the jejunum, further localization may be obtained in several ways. Although it antedates the use of x-ray and is largely a forgotten procedure, the string test of Einhorn is a simple and often valuable procedure in such cases. When positive it distinguishes very effectively between bleeding from the esophagus, upper stomach, antrum, and duodenal bulb. When negative it is of no localizing value, but if properly done is useful in that it reliably demonstrates the cessation of bleeding above the ampulla of Vater. Localization if obtained in this way can be helpful in guiding both the x-ray man and the endoscopist to a particular area for more careful study.

The string test, as modified by Rappaport, consists of the use of a piece of 4 ply wool yarn 33 inches in length, weighted at the end with a size 7 split shot and with radio-opaque markers at measured intervals. It is knotted 30 inches from the weighted end, moistened, and swallowed. The knot is taped to the corner of the mouth. This is done in the evening and the string removed the following morning before breakfast. An x-ray taken prior to removal will

confirm the position of the yarn. In the presence of very active bleeding this test is valueless except to show that such bleeding is still in progress, since the entire distal portion of the yarn will be soaked with blood and no localization can be obtained. If the yarn when withdrawn shows no evidence of blood staining, the test again has no value except to show that bleeding has stopped which may not be evident clinically at the time. A positive test depends upon a portion of the yarn coming in contact with a lesion which will bleed sufficiently on such contact to stain the adjacent segment of the yarn. Bile staining of the distal segment will indicate that the yarn has been in proper position with the tip in the duodenum. In this circumstance a blood stained segment at 16 inches or less will indicate an esophageal lesion; at 21 to 23 inches, an antral lesion; and at 24 to 25 inches, the duodenal bulb. Since the distance to the pylorus varies considerably an x-ray confirmation of position is desirable for lesions in the distal stomach or proximal duodenum. This test is normally quite simple to perform and is well tolerated by the average patient. It can be done nightly if necessary until a satisfactory answer is obtained or until all bleeding has stopped.

Finally the direct approach which is being taken with increasing frequency in cases of upper abdominal bleeding is combined endoscopy, i.e. esophagoscopy followed by gastroscopy, at the same sitting. This is being done more and more commonly at the time of the bleeding at which the information is urgently desired, and because certain sources of bleeding, such as from superficial ulceration or mucosal oozing in hypertrophic gastritis, are evanescent in their presence.

The need for such studies in cases where other studies are non-revealing is obvious. They are often equally helpful in cases where multiple diagnostic possibilities do exist. For example, in the presence of cirrhosis possibly no more than 40% of cases with bleeding manifested by hematemesis actually bleed from varices. When such bleeding does occur from varices it is usually from the lower esophagus, but may be rather high in the esophagus and not uncommonly comes from the varicosities in the cardia of the stomach. The remaining 60% of people with cirrhosis who bleed are about evenly divided between those that bleed from peptic ulcer and those that bleed from hypertrophic

gastritis. The speaker recently saw a case of cirrhosis of the liver, confirmed at surgery, with massive hematemesis in whom two x-ray studies had proved negative. Esophagoscopy was done and no varices or other source of esophageal bleeding was found. Gastroscoy was then done and a 1 cm. shallow ulcer filled with clotted blood was observed on the posterior wall of the body of the stomach. The patient was again x-rayed with negative findings. At surgery a thrombosed gaping vessel was found in the base of the ulcer. A second type of case in which endoscopy is of value is the patient with hematemesis who has x-ray evidence of a multiplicity of lesions. A common example is a combination of hiatus hernia, peptic ulcer, with or without either a gastric or duodenal diverticulum. Only by direct localization of the bleeding to one or the other of the lesions can a correct diagnosis be made. Unfortunately, endoscopy cannot reach duodenal lesions, but here again the string test of Einhorn, if positive, is useful in demonstrating a bleeding lesion in the duodenal bulb. If a bleeding lesion distal to the bulb and in the small intestine is suspected, intubation may prove a valuable procedure. The speaker prefers for this purpose a single lumened plastic tube twelve feet in length and with a mercury filled bag fastened to the tip. This is inserted into the stomach and allowed to pass to the distal ileum. Specimens are taken for gross examination and chemical test from the stomach and each foot distal thereto, where it is possible to obtain a specimen. If gross blood is encountered, or if there is a significant increase in the amount of occult blood obtained, an x-ray is taken to further localize the tip. Barium may be injected if desired. The stools are studied for gross and occult blood daily for a period of three days before and if the study is negative for three days after the test. Similar information can be obtained with less pitfalls, but also with less patient acceptance, from a four lumened tube inserted to the terminal ileum and so arranged at this point that drainage is concurrently obtained from the stomach and jejunum and terminal ileum. This later procedure would, for example, permit the recognition of bleeding commencing in a duodenal ulcer after the balloon had reached the terminal ileum. Intubation is more useful in cases of persistent low grade bleeding than in massive intermittent bleeding.

A recent example of the use of intubation for the localization of bleeding concerns a middle aged female who had manifested occult bleeding for a known period of eight years without remission. Repeated x-ray studies had not been helpful. Small flecks of gross blood were encountered when the tube reached the lower jejunum. Exploration revealed a partial intussusception, the leading point of which was a bleeding polyp. The lesion was resected and post-operative studies have revealed no subsequent evidence of gastrointestinal bleeding.

When bleeding is demonstrated by intubation at the level of the ileocecal valve and is not present in the proximal ileum, the possibility of a bleeding Meckel's diverticulum should be strongly considered. Inasmuch as the diagnosis of such lesions is normally only a matter of suspicion and since their surgical correction is not difficult such evidence can prove most useful.

When through the foregoing procedures the source of bleeding is found to be below the ileocecal valve but superior to the highest point which can be reached by sigmoidoscopy a concerted diagnostic effort can be directed to this area. Intubation has not proved too effective in this area because of the thickened character of the intestinal contents. The radiologist, however, can make use of his best contrast techniques. If all else fails, the surgeon can, if necessary, following careful exploration inspect the inner surface of the colon with a proctoscope inserted through strategic openings. Small bleeding lesions such as hemangiomas or small polyps are often found in this way.

In conclusion the problem of gastrointestinal bleeding remains a dangerous one from the standpoint of the patient and frequently a difficult one diagnostically and therapeutically for the physician. While a small group of common lesions are responsible for the majority of cases of bleeding the less common causes are almost without number. Frequently multiple lesions exist, each of which is potentially a cause of bleeding, and each of which may best be treated differently. In the obscure case much help, both from the standpoint of exact diagnosis and planning treatment can be obtained by the accurate localization of the bleeding point. The use of the Einhorn string, combination endoscopy, and intubation for this purpose have been discussed.

BLOOD AMMONIA LEVELS IN CONGESTIVE HEART FAILURE

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DISORIENTATION, delirium, frank psychosis, tremors, and even more complicated pictures of mental and neurological abnormalities have long been noted during and as a terminal event of congestive heart failure. So frequently and for so long have these signs been noted that seldom is an explanation asked for. When the matter is questioned the traditional interpretation of these central nervous system manifestations utilizes the obvious state of hypoxia to explain the phenomena. Doubtless, the diminished oxygen supply to the various organs of the body must result in profound and complex metabolic changes contributing to nervous system changes. In spite of the reasonableness of this exposition it has been questioned of recent date. The belief that other factors contribute certain features is now more convincing.

For several years we have been impressed by the striking similarity in mental and neurological abnormalities seen in the patient in hepatic coma and the patient suffering severe congestive heart failure. Emotional irritability, confusion, delirium, agitation, flapping tremor, lethargy, and weakness are common to both conditions. Clarification of the pathogenesis of these complicating signs in severe liver failure immediately suggest application of the same explanation in congestive heart failure. Liver dysfunction and abnormalities coexisting in heart failure have already been the subject of interest for some time so the relationship seems less remote.

Both anatomical and functional alterations of the liver in patients with congestive heart failure have been reviewed by many investigators. (1, 2, 3, 4, 5) Anatomical changes include dilation of the sinusoids and narrowing of the liver cords in the central area of the lobules, necrosis of the central cells, condensation of reticulum in the degenerated central areas, marked thickening of the walls of the central and hepatic veins, as well as fibrosis of the liver with active fibroblastic proliferation. The degree of hepatic necrosis varies with the degree and severity of congestive heart failure. So called liver function

tests are also deviated from the normal. (1, 2, 3, 4, 5) Bromsulfalein excretion is usually impaired. Mild elevation of serum bilirubin is common, but clinical jaundice is rare in the absence of pulmonary infarction. The urine urobilinogen is often elevated. Serum albumin, alkaline phosphatase, thrmol turbidity and cephalin cholesterol flocculation values are usually normal, however.

Innumerable metabolic abnormalities surely exist during any given episode of severe liver failure. The complexities of these deviations still largely defy actual measurements. This is to be expected in a situation, involving a structure with such broad functions as the liver. Its activity in protein metabolism has recently attracted much interest, chiefly because of the repeated observation that blood ammonia levels are usually quite elevated in liver failure and hepatic coma.(6, 7, 8, 9, 10, 11) Examination of the literature concerning this subject points up the curious fact that although the fundamental knowledge concerning the problem has been known to bio-chemists and physiologists for many years clinical application, has been attempted only recently.

It has been well established by experimental work that the liver is the principal site for the deamination of ammonia containing compounds absorbed by the intestine. Folin and Dennis(12) demonstrated that the ammonium content of the portal blood was significantly higher than that of the peripheral circulation. More than thirty years ago Mathews(13) reported that Eck fistula dogs fed a high protein diet developed the syndrome of "meat intoxication." It is now clear that this syndrome has a remarkable similarity to hepatic coma in humans. In fact, comparable demonstrations in humans with portocaval shunts have been made by McDermott and Adams,(14) and Havens and Child.(15) The supposition that high blood ammonia concentrations in the portal vein, resulting from the absorption of nitrogenous substances from the intestinal tract, by-pass the normal urea synthesizing mechanism in the liver is reasonable. It must be further theorized

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that these high levels of ammonia, now present in the systemic circulation exert a dilerterious effect upon the central nervous system producing the syndrome which we call hepatic coma.

Bessmann and Bessman(16) have suggested that high levels of ammonia in the blood result in the increased formation of glutamine from alpha keto glutarate with a decreased amount of the latter compound available in the central nervous system to take part in the Krebs Cycle. It should be reemphasized that an elevated blood ammonia level may well be only one of multiple metabolic and biochemical abnormalities occurring in hepatic failure and coma. Whether the mental and neurological changes in this syndrome can be charged directly and specifically to ammonia ion intoxication is to date still unsettled.

Sherlock and others,(17) finding elevated blood ammonia levels in patients with cirrhosis who evidenced good hepatic cellular function convincingly suggested portal systemic shunting of ammonia rich blood by and around the normally functioning liver cell. The effect upon the central nervous system, they have termed portal systemic encephalopathy. Here the situation is one of circulatory failure, after a fashion, because of abnormal collateral shunting of portal blood either around or through the liver. In the patients with acute severe hepatocellular damage, the explanation must be altered. Here the liver is so severely damaged and parenchymal cell function is at such low ebb that the liver acts as "a sieve", failing to perform its function of deamination of nitrogenous materials and passing these on into the systemic circulation.

The above mentioned mechanisms may be operating in patients with congestive heart failure. Severe liver damage resulting from congestive heart failure may interfere with the deamination of ammonia containing compounds brought to the liver by the portal vein. Increased pressure in the hepatic veins and sinusoids, as a result of congestive failure may increase portal vein pressure with a resultant increase in the flow of the ammonia rich portal blood through portocaval collateral vessels such as the gastroesophageal, hemorrhoidal and superficial abdominal veins. Thus it is seen that in congestive heart failure there are two mechanisms which may result in increased

systemic blood ammonia concentrations.

The possibility that patients with congestive heart failure are prone to develop "ammonia intoxication" assumes more than academic interest. Three of the main therapeutic agents used in the treatment of these patients — ammonium chloride, cation exchange resins, and diamox have been shown to be precipitating agents in the production of hepatic coma in patients with liver disease. The possibility that these therapeutic agents may actually be more harmful than beneficial in patients with severe passive congestion of the liver due to cardiac failure must be considered.

Elevated blood ammonia levels have already been reported in patients with congestive heart failure. In a series of 9 patients Bessman and Evans(21) found elevated blood ammonia levels in eight. It is the purpose of this report to present our observations of blood ammonia levels in patients with congestive heart failure studied during the past twelve months.

Material and Methods

Fasting blood ammonia concentrations were performed in twenty-six patients who were hospitalized because of congestive heart failure. There were fifteen males and eleven females. Their average age was 56.6 years with a range from thirty-two to seventy-three years. Ten patients had arteriosclerotic heart disease, eight had rheumatic heart disease, six had hypertensive heart disease, two had cor pulmonale, two syphilitic heart disease, and one had kyphoscoliotic heart disease. Three patients had two types of heart disease.

All of the patients in this study had hepatomegaly. The degree of liver enlargement was determined by palpation and percussion. The liver was considered to be slightly enlarged if the inferior border was detectable up to four centimeters below the right costal margin in the midclavicular line. If the border was four to eight centimeters below the costal margin, the hepatomegaly was classed as moderate. Markedly enlarged livers were those whose lower borders extended over eight centimeters below the right costal margin. Two patients had slightly enlarged livers, nineteen had moderately enlarged livers and five had markedly enlarged livers. Eleven of the twenty-six patients showed some abnormality of the standard liver function tests. None of the patients had

dilated abdominal veins, hemorrhoids, esophageal varices or other evidence of portocaval collateral circulation. Abnormally high venous pressures were recorded in eleven of thirteen patients in whom they were performed.

The blood ammonia determination was carried out by a modification of Conway's method.(22) Venous blood was introduced into a saturated solution of potassium carbonate in the outer chamber of a Conway dish. The inner chamber containing 0.0002N hydrochloric acid with methyl red methylene blue indicator was titrated with 0.0005N barium hydroxide after diffusion was allowed to proceed at room temperature for fifteen minutes. A blank and a standard solution of ammonium sulfate were run simultaneously with the unknown. The details of this determination are reported elsewhere.(23) In all cases, the diffusion process was started within five minutes after the blood was shed. It has been shown that the ammonia content of the blood is stable up to twenty minutes after the blood is shed.(23)

In our laboratory normal values for fasting blood ammonia range from 50 to 110 micrograms per one hundred milliliters. Abnormal values are those above 135 micrograms per one hundred milliliters. Concentrations between 110 and 135 micrograms per one hundred milliliters are in a twilight zone and considered neither normal or abnormal by us. Figure 1 shows the percental distribution of various blood ammonia concentrations as determined by our laboratory in one hundred normal fasting persons.

Results

Table I lists the blood ammonia concentrations of the patients in this series. It will be noted that out of a total of twenty-nine blood ammonia values, twenty-five were in the normal range, two were in the twilight range (C. B. and A. M.), and two were markedly elevated (L. F. and R. P.). We were unable to obtain any significant correlation between the blood ammonia concentrations and the size of the liver, duration of congestive failure, height of venous pressure, or the degree of abnormality of the standard hepatic function tests.

Case Reports

The clinical course of the two patients in whom abnormally high blood ammonia levels were found are reported below:

TABLE I

| Patient | Blood Ammonia (micrograms %) | Central Nervous System Abnormalities |
|---------|---------------------------------|---|
| O. F. | 59 | O |
| E. C. | 77 | O |
| V. T. | 75 | O |
| J. V. | 62 | O |
| D. C. | 77 | O |
| C. B. | 62, 110 | O |
| L. F. | 176 | X |
| I. M. | 70 | O |
| L. F. | 71 | O |
| T. V. | 91 | O |
| A. M. | 111, 89 | O |
| F. H. | 84 | O |
| G. H. | 92 | O |
| M. J. | 62 | O |
| M. K. | 92 | O |
| F. M. | 69 | O |
| G. F. | 71 | O |
| W. N. | 82 | O |
| C. K. | 82 | O |
| J. B. | 77 | O |
| S. H. | 82 | O |
| M. L. | 92 | O |
| G. H. | 67 | O |
| H. W. | 62 | O |
| L. N. | 107 | O |
| R. P. | 164, 81 | X |

Case 1. L. F., a 35 year old male was admitted to the hospital with a diagnosis of subacute bacterial endocarditis due to streptococcus viridans. The patient had had rheumatic fever at the age of 12. He had been asymptomatic until 6 months prior to admission when he noted fever and fatigue. Three weeks prior to admission he developed signs and symptoms of congestive heart failure.

Physical examination revealed cardiomegaly. Murmurs of mitral stenosis and insufficiency were present. Moist rales were present in both lung bases. The liver was enlarged to 7 cm. below the right costal margin. The spleen was palpable 4 cm. below the left costal margin. Moderate ascites was noted. Two plus sacral, pretibial and pedal edema was present. Several splinter hemorrhages were noted in the nail beds.

Nonprotein nitrogen was normal. Liver function tests were within normal limits. Blood cultures positive for streptococcus viridans. Blood ammonia was 62 micrograms %.

The patient was digitalized, treated with diuretics, and given eight million units of penicillin daily for six weeks. On this regimen, he became afebrile and recompensated. He was discharged on a low salt diet and maintenance gitalin after almost two months of hospitalization.

Seventeen days after being discharged, he was readmitted acutely ill. For three days prior to this admission the patient had noted lethargy, nausea, vomiting, anorexia, oliguria and ankle edema.

At this time he was extremely lethargic and

apathetic and unable to give a reliable history. No fever was present. The lungs were clear. The cardiac murmurs were unchanged. The liver was enlarged 8 cms. below the right costal margin. Two plus pedal edema was present. Bilateral Babinski signs were noted.

During this hospitalization the blood non-protein nitrogen rose steadily from 114 to 155 mgm. %. The serum sodium ranged from 119 to 132 meq./L.; serum potassium from 7.0 to 7.9 meq./L., and the serum chloride from 89 to 96 meq./L. Carbon dioxide combining power varied from 8.8 to 15.4 meq./L. Hepatogram showed a bilirubin of 7.4 mgm. %, alkaline phosphatase of 31 millimol units and cholesterol esters of 11%. Blood cultures were negative. The blood ammonia was 176 micrograms %.

The patient was treated with low salt diet, gitalin, and parenteral fluids. Throughout his brief hospitalization, he was restless, confused, drowsy, irritable and hallucinating. During the last forty-eight hours of his life, he became jaundiced and comatose. He gradually went downhill and died six days after admission to the hospital.

At autopsy the heart weighed 1000 grams. The mitral valve showed an old rheumatic valvulitis with rupture of many chorda tendineae due to healing verrucae. There was dilation of the right atrium and right ventricle. The left atrium was markedly dilated and contained a mural thrombus. The lungs showed chronic passive congestion. There were tiny healing infarcts in the spleen and kidneys. The liver weighed 1200 grams and showed central necrosis. Tremendous passive congestion was present. In many places the congestion was of such a degree as to stimulate hemorrhage in the liver. The sinusoids and liver parenchymal cells were completely overwhelmed by the amount of erythrocytes present. It was the conclusion of the pathologist that the superimposed sub-acute bacterial endocarditis, by further damaging the mitral valve, contributed to congestive failure. It was thought that the endocarditis was healed, but unfortunately the vegetations were not cultured.

During the last few days of this patient's life, he showed many of the signs of a patient in liver failure and coma. This patient had had no liver disease until congestive heart failure developed. It is reasonable to assume that all

the anatomical and functional changes in the patient's liver were due to congestive heart failure. During his first hospitalization, the patient was clear mentally and had a normal blood ammonia level. At the time of his demise, he had a markedly elevated blood ammonia level and showed mental and neurological abnormalities.

Case 2. R. P., a 59 year old man was admitted to the hospital in congestive heart failure of one month's duration manifested by dyspnea, orthopnea, and edema. He had had diabetes for the past 15 years. At the time of admission, he was taking 60 units of NPH insulin daily, digitalis, and ammonium chloride.

On admission he was disoriented, lethargic, and repetitious in his conversation. History taking was difficult, because of the patient's mental status. Coarse moist rales were present in the right lung base. The heart was not enlarged to percussion, but a grade two apical systolic murmur was present. Minimal ascites was noted. The liver edge was palpable 6 cms. below the right costal margin. Two plus pitting edema of the feet and ankles was present. The hepatogram was normal. The electrocardiogram showed an old antero-septal myocardial infarction.

The blood ammonia concentration was 164 micrograms % on the day following admission. The patient was placed on a 1700 calorie rice and fruit diet that contained 50 mgm. of sodium a day. He was given 20 units of NPH insulin and 0.15 mgm. of digitoxin daily. His weight dropped from 160 to 139 pounds and his dyspnea, orthopnea, and edema disappeared. For the first few days in the hospital, his sensorium remained unchanged. Then it gradually became clearer as his congestive failure was controlled. On the day of his discharge from the hospital, he was mentally alert and fully oriented. A repeat blood ammonia level at that time was 81 micrograms %.

This patient showed an abnormally high blood ammonia level associated with mental aberrations and cardiac decomposition with passive congestion of the liver. As he responded to treatment, his liver became smaller, the blood ammonia level returned to normal and he became mentally alert again. It is interesting to speculate on the role of the ammonium chloride that he received prior to admission in the production of a high blood ammonia level in this patient. Hepatic coma has been

produced in patients with liver disease by the administration of ammonium chloride.(24)

Discussion

In view of the autopsy findings, it seems obvious that the cause of death in the first case was severe congestive heart failure. The severe degree of congestion of the liver was sufficient to result in a marked degree of jaundice as well as to cause abnormalities in the standard liver function tests. The abnormally high blood ammonia demonstrated in this patient can best be explained by the severe degree of hepatic damage. It is postulated that some of the high ammonia containing portal vein blood was shunted around the liver and directly into the systemic circulation as a result of the tremendously increased intrahepatic pressure. In addition, the surviving hepatic cells were probably unable to synthesize urea from ammonia because of damage to them as a result of high intravascular pressure and hypoxia within the liver. We are unable to satisfactorily explain the azotemia in the patient. Possibly it may have been the result of renal dysfunction, secondary to severe chronic passive congestion and hypoxia.

The second case illustrates a correlation between congestive heart failure, elevated blood ammonia level and mental aberrations. Again we wish to emphasize that an elevated blood ammonia level is only one metabolic abnormality in a complex picture. Any attempt to explain the mental or neurological picture of hepatic coma on the basis of an elevated blood ammonia alone is a gross oversimplification. Numerous other metabolic abnormalities are undoubtedly present.

Since it has been shown repeatedly that the administration of diamox, ammonium chloride, and cation exchange resins in hepatic disease may cause an elevation of the blood ammonia level, (11, 18, 19, 20) it becomes obvious that these therapeutic agents may be contraindicated in severe chronic passive congestion of the liver. It seems apparent from clinical studies that an elevation of the blood ammonia is associated with definite neurological and mental signs and symptoms.(7, 8, 9, 10)

It is apparent from the results of this study that a great many patients with congestive heart failure and chronic passive congestion of the liver have normal blood ammonia levels. Since

diamox, ammonium chloride and cation exchange resins have been used repeatedly in the routine treatment of congestive failure without detrimental effects, it seems reasonable to assume that in the average case, they are relatively innocuous. However, if a patient in congestive failure shows a severe degree of hepatic congestion and/or mental or neurological aberrations, the administration of any of these agents which are known to be able to precipitate hepatic coma is contraindicated. In brief, it is to be emphasized that the indiscriminate use of ammonium chloride, diamox, and cation exchange resins in congestive heart failure is to be condemned. While the use of these agents is beneficial in most patients; they may well be detrimental in some patients.

In the future, additional studies of the blood ammonia levels in patients with congestive heart failure before and after the administration of diamox, ammonia chloride, and cation exchange resins are contemplated. The use of the ammonia chloride tolerance test as described by White et al(24) in patients with liver disease would be of interest in this group of patients. The role of antibiotics in lowering an abnormally high blood ammonia by decreasing the amount of amine forming bacterial flora in the intestinal tract needs to be evaluated. The part played by electrolyte imbalance in congestive heart failure in relation to mental and neurologic changes requires further investigation.

Summary

1. Blood ammonia levels were determined in twenty-six patients with congestive heart failure and hepatomegaly. A total of twenty-nine determinations were performed of which twenty-five were normal, two border line, and two markedly elevated.

2. The clinical course of the two patients with elevated blood ammonia levels are reported. Both patients exhibited mental and neurological abnormalities similar to those found in patients in hepatic coma.

3. Possible explanations for elevated blood ammonia levels in congestive heart failure are discussed.

4. The potential hazards involved in the use of diamox, ammonium chloride and cation exchange resins in patients with congestive heart failure and hepatic damage is emphasized.

5. The need for additional investigative studies in this field is brought out.

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OMISSION

In the November 1956 issue of Arizona Medicine on Page 399 a credit was omitted from the first picture appearing on that page.

The credit should have read as follows:

We thank Mr. J. A. Rivers, Esq. of J. A. Churchill Ltd., of London, England for permission to use this illustration from Dible and Davie's PATHOLOGY, published by J. B. Lippincott Co., Phila., 1950 (3rd Ed.) page 750.

PHOENIX *Clinical* CLUB

The Case History in this discussion is selected from the Case Records of the Massachusetts General Hospital, and reprinted from the New England Journal of Medicine. The discussant under Differential Diagnosis is a member of the staff of the Massachusetts General Hospital. The other discussants are members of the Phoenix Clinical Club.

MASSACHUSETTS GENERAL HOSPITAL PRESENTATION OF CASE

A 58 YEAR old professional man was in good health until March 4, 1953 when, while buying a ticket in a railroad depot, he suddenly fell down unconscious. He was in the company of a physician who thought the patient had collapsed due to myocardial infarction, but the pulse was of normal rhythm and not unusually rapid. There were no convulsive movements. Loss of consciousness lasted approximately ten minutes and then a clearcut dysphasia became apparent. The patient was rushed to the hospital, but when an electrocardiogram proved normal he was taken home. The dysphasia gradually cleared over a period of two hours, and except for some anxiety the patient was quite normal the rest of the day. There had been no paralysis or headache. The next ten days were uneventful, but then brief attacks of dizziness appeared occurring one to five times a day. The patient usually sat down, rested his head on his arms, and in one or two minutes pronounced the attack finished. There was no rotatory feeling but rather a peculiar sensation in the head. Following at least one attack definite aphasia, chiefly nominal, occurred for about five minutes. After these episodes had persisted for about two weeks, the patient was hospitalized on March 29.

The only additional history included an uncomplicated cholecystectomy and infectious mononucleosis in 1949. General and neurologic examinations were not significantly abnormal. The pupils were equal and reacted well to light. Fundi were not remarkable. Visual fields were full. There was no nystagmus. Ocular movements were full. There was no facial

weakness. Hearing was normal. Throat and tongue were normal. Motor power, coordination, finger-nose and heel-knee tests, and sensation for pin, vibration, touch, and position were not remarkable. The patient's mind and memory were intact. Blood pressure was between 160/100 and 150/90. The blood Wassermann test was negative, sedimentation rate, 6. The blood count and urinalysis showed no abnormality. Roentgenograms of the chest and skull were normal, the pineal gland lying in the midline. An electroencephalogram was entirely normal. Liver function studies and blood chemistry including sugar and urea nitrogen were normal. An exact diagnosis could not be reached and the patient was discharged with instructions to rest.

During two months of rest (April and May) he was quite symptom-free and in June returned to his office. Soon it became apparent to his wife and co-workers that he had difficulty in naming objects and people. His memory became progressively impaired and he used notes as reminders. His wife noticed an unusual verbosity in that he harangued his clients at great length, quite unlike his usual manner. On the other hand, casual acquaintances noticed nothing amiss. The patient's usual energy was preserved and he continued to work. About the beginning of July, trembling and mild weakness of the right hand appeared, followed in a few days by dragging of the right leg. Propositional speech became progressively impaired although he could still converse readily. On July 14 his condition deteriorated rather abruptly with great weakness of the right side of the body and accompanying drowsiness. The next day he could walk only with difficulty. There had been no incontinence, headache, or convulsion. He had continued to eat well.

At this time examination showed a well-developed, well-nourished man lying quietly in bed. Spontaneous and responsive speed were almost absent and the patient seemed to comprehend nothing. There was a slight tendency to weariness, but he was wide awake and usually just gazed at the examiner when asked to put out his tongue, close his eyes, and so

on. Any attempt at answering questions — “How are you?”, “Do you have pain?” — soon became puzzled jargon. He did not name the simplest of objects.

The pupils were equal and reacted to light. There was no nystagmus and ocular movements were full. The fundi including disks, retina, and vessels were not remarkable. The visual fields were difficult to assess but no hemianopsia could be demonstrated. There was clear cut weakness of the right lower face. Hearing was good and the ear drums normal. Motor power in the right upper and lower limbs was 30 to 40 per cent of normal. A conspicuous abnormality was the presence of a rhythmic, flexion-extensor tremor of the fingers and of the toes and foot on the right side. The tremor was regular at approximately four per second. The face was not involved. The tendon reflexes were brisk and approximately equal on the two sides. There seemed to be a cogwheel type of rigidity in the right limbs. The plantar response was extensor on the right, flexor on the left. Sensation could not be adequately tested, but withdrawal from pinprick was more prompt on the left. The patient could walk by himself only with great difficulty owing to the weakness of the right leg. There was no incontinence or neck stiffness. Temperature, pulse, and respiration were normal. The heart and lungs were not remarkable. Blood pressure was 160/100. Peripheral pulsations were present in both internal carotids, both anterior tibials, but only in the left posterior tibial artery. Arrangements were made to transfer the patient to a hospital in a neighboring city, but during the night of July 17 he became comatose and died.

When a 58 year old man suddenly falls unconscious on the street, the first thought of his attending physician is that he has had some sort of cardiovascular accident, either cerebral or coronary, and such was apparently the situation in the case under consideration today.

Impaired consciousness may be due to many and varied causes. Ordinary vasovagal syncope, orthostatic hypotension, and peripheral circulatory collapse such as that seen in acute blood loss, shock, etc. are common causes of short periods of loss of consciousness. Likewise direct interference with blood supply to large areas of the brain such as in thrombosis of the in-

ternal carotid artery or one of its major branches may cause unconscious states, and acute trauma to the brain such as in cases of skull fractures and concussion may account for loss of consciousness. Subdural hematoma and space occupying lesions of the brain may cause coma and frequently acute cerebral vascular accidents are ushered in by a loss of consciousness. Likewise, changes in the chemical structure of the blood such as are seen in uremia, hypoglycemia and hyper-ventilation syndrome produce states of unconsciousness as do certain toxic states or infections such as encephalitis, etc.

Such symptoms are usually not localizing but denote diffuse or general involvement of the brain. However, certain areas such as the frontal lobes and the basal ganglia, when involved, are prone to produce unconscious states. These occurrences may or not be accompanied by convulsive manifestations.

The problem in solving a neurological case such as this is twofold; namely (1) to establish the localization of the lesion and (2) the nature of the lesion. The development of aphasia in our case narrows down the localization to the left hemisphere, assuming that our subject is a right-handed individual. The problem of aphasia is a very complicated one and at the present time is in a definite state of “flux” and much confusion exists in terminology of the various types of aphasia as well as the localization of the so-called speech centers of the brain. The tendency at the present time is to include one rather large so-called speech area roughly including the “quadrilateral space of Marie” which takes in the region of the motor area of Broca and extends backward along the Sylvian fissure in the upper temporal lobe to the region of the angular gyrus. In other words, this area is bounded externally by the cortex, mesially by the internal capsule, anteriorly and posteriorly by the limits of the “Insula” or the so-called “Island of Reil.” The mechanism of speech, or language, is a very complex one and involves the intelligence level of the individual and all of the senses, with subcortical pathways connecting the visual, auditory, and other higher centers to the so-called speech centers of the brain in the temporal and lower frontal lobe cortical areas. For the sake of simplicity, there are two main types of aphasia:





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¹Posner, A. C., *et al.*; Further Observations on the Use of Tetracycline Hydrochloride in Prophylaxis and Treatment of Obstetric Infections, *Antibiotics Annual* 1954-55, pp. 594-598.



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^{*}REG. U.S. PAT. OFF.

PHOTO DATA: SPEED GRAPHIC CAMERA,
F.16, 1/50 SEC., ROYAL PAN FILM

(1) the so-called motor or "efferent" which is localized primarily in the anterior portion of the quadrilateral space, or roughly in the Broca area. In such cases, the patient cannot spontaneously utter words, may simply be able to say "yes" or "no" or to produce some interjectional speech or even be able to swear. Likewise, he cannot write or repeat words although he can comprehend the meaning of words. Such patients frequently become irritable and emotionally unstable and frustrated because they cannot express what they feel or think. (2) So-called sensory or "afferent" aphasia is localized in the posterior one-half of the quadrilateral space of Marie being somewhere in the region of the angular gyrus usually. Such patients are usually able to utter words but cannot name objects, etc. and speech is apt to be "jargon" or jumbled. The more cortical the lesion, the more distorted the speech. Jargon speech is more common in subcortical lesions; and in extensive cortical lesions the patient may be entirely mute. Nominal aphasia which this patient exhibited early in his disease is a form of sensory aphasia, as is jargon aphasia, which the patient likewise exhibited later in his disease. It can therefore be concluded that our patient had a left temporal lobe lesion occupying the posterior portion of the temporal lobe just inferior to the Sylvian fissure and extending backward to the region of the angular gyrus.

What of the other symptoms in this case? After a lapse of approximately two months from the initial signs of illness, his speech and memory became more notably impaired and there were some changes in personality noticeable only to his wife and close acquaintances. Do these changes namely of "verbosity", haranguing, etc. indicate frontal lobe pathology where we have been taught that personality changes originate, or can they be explained perhaps on the basis of some lesion in the temporal lobe? Recent studies by Drs. Gibbs and John Green, indicate that certain behavior patterns are altered by temporal lobe lesions. Nor do all such changes indicate organic brain pathology, for there is considerable evidence that emotional changes may be due to so-called threat to the ego or, in plain language, frustration due to handicaps such as speech and memory defects, etc. Further developments in this case including weakness and paralysis of the right arm and leg and the lower right face,

can be explained by spread of the lesion in the overlying temporal lobe to the deeper underlying structures; namely, the internal capsule. In addition to this paralysis, we have the development of a so-called cogwheel type tremor which indicates involvement of the basal ganglia. This tremor sounds rather typical of Parkinsonian tremor which is usually attributed to pathology in the region of the corpus callosum. This is an example of the so-called "escape" or "release" motor mechanism of basal ganglia lesions. There were no demonstrable eye changes but in the presence of the patient's aphasic status, hemianopsia could very well have been missed on direct examination. Death apparently came as the result of sudden coma, approximately four and one-half months from the onset of illness.

Having localized the lesion in the left hemisphere, temporal lobe, the posterior one-half of the quadrilateral space of Marie, what is the nature of the pathological process? The causes of aphasia, which is one of the outstanding symptoms in this case, are usually organic and can be discussed under the following categories: (1) Vascular lesions, (2) Degenerative or atrophic lesions, (3) Neoplastic diseases, (4) Inflammatory diseases, and (5) Traumatic lesions. Of these groups, I feel that only vascular and neoplastic lesions deserve serious consideration. Of the so-called degenerative or atrophic conditions, mention should be made of Alzheimer's Disease which can mimic vascular disease of the brain. This disease runs a progressive course, can frequently involve the temporal lobe, produces dementia and results in a fatal outcome in 2-3 years. Progress of the disease in this instance, I believe, is too acute for this diagnosis.

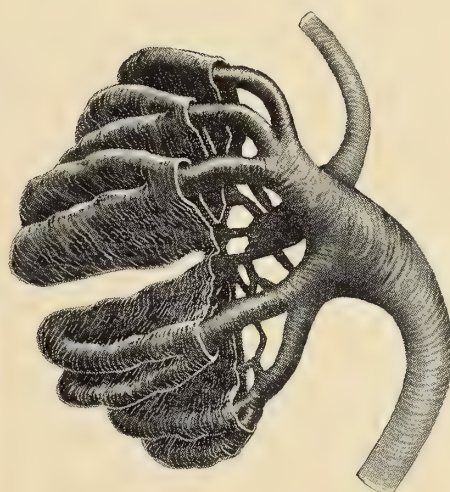
Inflammatory diseases such as encephalitis, etc. are not suggested by the protocol. Neither is a metastatic abscess in the temporal lobe as the result of an extension from a middle ear or mastoid infection. Syphiloma of the brain in a temporal lobe could explain symptoms but in the absence of a positive serology and spinal fluid findings, this diagnosis cannot be entertained. (Incidentally, one cannot help wondering why spinal fluid studies were not done in this case, and likewise why more complete central nervous system studies were not done. It is assumed, of course, that the proposed move to another hospital just prior to the patient's demise was for this purpose).

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SEARLE

Of the two remaining categories, neoplasm versus vascular disease of the brain, I feel that only the autopsy surgeon can be expected to give a competent answer and all that others of us can do, is to hazard a guess. Our man is in the age group for either cardiovascular accident or tumor. If he had a cardiovascular accident it was likely a progressive thrombosis (as are 82% of vascular lesions of the brain) of the sylvian branches of the middle cerebral artery with resultant progression of softening first of the cortical and later of the subcortical layers of the left temporal lobe with a further vascular insult probably in the deeper branches of the same artery at the time of his death. Our patient had moderate hypertension and was in the arteriosclerotic age group. Perhaps a lesion such as thromboangitis obliterans might have been the basis of his vascular pathology.

If a tumor were present, glioblastoma multiforme is the most likely choice (30% of brain tumors). This tumor is very rapidly growing and may simulate vascular disease in many instances. It occupies the cerebral hemispheres usually and often ends fatally in twelve months or less. It occurs in the middle age group, frequently undergoes cystic degeneration and frequently is complicated by necrotic changes, hemorrhage, etc. Against the diagnosis of tumor is the reported lack of shift in the pineal body (done early) and the apparent absence of signs of increased intracranial pressure, (negative eye grounds and absence of headache and vomiting). However, in certain areas of the brain such as the temporal lobe, other symptoms may indicate pressure mentioned above. There is something about this case that somehow does not ring true for a vascular accident and I therefore chose to believe that this man died from a glioblastoma originating in the left temporal lobe of the brain and finally breaking through into the internal capsule in the basal ganglia area, probably producing extremis as the result of hemorrhage or rupture of a cystic degenerated tumor into a vital area of the brain.

BEN P. FRISSELL, M.D.

DISCUSSION

At the time of the patient's hospital admission one month after onset of his illness, it was thought that cerebral vascular disease was probably responsible for his symptoms. Sudden fainting spells are not at all rare in older people

who are quite well otherwise. Such attacks are commonly akinetic, convulsive movements not being part of the picture. The pathologic or pathophysiologic basis for such episodes is unknown, but cerebral arteriosclerosis is often held responsible. To have dysphasia follow such episodes is rare and some other category of attack has to be considered. In the case at hand, the sudden onset, unconsciousness, temporary dysphasia, lack of convulsive movements, the age of the patient, and the presence of mild arterial hypertension pointed strongly to vascular insult. When mild attacks of dizziness appeared, followed at least once by dysphasia, the picture was reminiscent of the transient episodes which often herald the onset of a stroke due to cerebral thrombosis. The negative medical and neurologic examinations bore out this clinical impression, which was further substantiated when rest for two months resulted in complete relief of symptoms.

When the patient was hospitalized it was also suggested that he was having transient attacks of cerebral ischemia due to temporary cardiac dysfunction. Such an interpretation is often favored by cardiologists in similar cases but, in the absence of evident cardiac disease, the Stokes-Adams syndrome is, for practical purposes, the only type of cardiac disorder likely to lead to recurrent cerebral disturbances. The heart is probably much too quickly blamed for atypical vertigo, faintness, or attacks of so-called cerebral vasospasm, when a careful analysis of the patient's complaints will usually suffice to indicate the true nature of the symptoms.

After two months free of symptoms, there occurred gradually a progressive deterioration, characterized in order of appearance by nominal aphasia, memory loss, weakness of right arm and leg, drowsiness, complete aphasia, and death. The patient's relatives, although not certain, thought that these deficits appeared insidiously (until the last few days when deterioration was rapid) and had not advanced in an abrupt stuttering fashion. If this information was correct the diagnosis of incipient cerebral thrombosis would have to be revised. Cerebral thrombosis practically never produces a slowly progressive decline, but tends rather to lead to episodic, abrupt worsenings, fractions of the total hemiplegia being added from time

to time. This is true also of thrombosis of the internal carotid artery, and in this case pulsation in both carotid systems was good. Rarely, an intracerebral hemorrhage leads to increasing deficit over a period of a month or more, but usually headache is present.

If the relatives' story was reliable, the slow, progressive course would point to an expanding intracranial lesion, particularly a tumor either primary or secondary. Yet at no time was there headache; papilledema was absent the day before death, and previous roentgenograms of the skull and an electroencephalogram were normal. Furthermore, the onset of illness with a sudden attack of unconsciousness followed by spells of dizziness did not suggest tumor. In regard to secondary tumor, there was no weight loss, the sedimentation rate was normal, and a roentgenogram of the chest showed no lesion. Secondary tumor deposits in the brain rarely run their course without the appearance of pulmonary lesions, but a film of the chest had not been made in the weeks prior to death. An intracranial abcess occasionally occurs unexpectedly without any source and unassociated with signs of meningeal irritation, but in this case the illness had been too lengthy. The presence of a subdural hematoma had to be kept in mind, although the slow, progressive type will not lead to total aphasia without marked disturbance of consciousness. There was no history of injury to the head but, of course, this is not significant. The abrupt onset of the first symptoms and the lack of headache would be atypical of a subdural hematoma.

The presence of the rhythmic, four per second tremor of the right hand and foot was most striking, but unfortunately no one who was consulted was aware of any diagnostic value attached to such a sign. The tremor was clearly not that of partial continual epilepsy but mimicked the trembling of parkinsonism, except for its slightly faster rate. The fingers and toes seemed to flex synchronously and all five digits of the hand were involved.

Finally, the diagnosis of suspected brain tumor was made. In this conclusion, the character of the onset, the period of cessation of symptoms, and the absence of headache and papilledema were disregarded, in view of the slow, progressive final course which is scarcely ever due to vascular disease.

PATHOLOGIC FINDINGS

The left temporal lobe, from its anterior tip to a point 7 cm. posterior was occupied or replaced by a huge tumor mass, which histologically was of the glioblastoma multiforme type. A large uncus herniation on the left side was associated with multiple pontine hemorrhages. In its deeper portion the tumor clearly invaded the inferolateral portion of the putamen and adjacent internal capsule.

COMMENT

This case is an example of an extensive tumor running its entire course without headache or pilledema. The interpretation of the progressive course as suggestive of tumor rather than arterial disease proved correct. Pathogenesis of the initial attack remains obscure, but the attacks of dizziness probably were minor seizures. The failure of the electro-encephalogram to show an abnormality provides another example of the fact that as a rule clinical data must still provide the essential ingredients of a correct diagnosis. The nature of the rhythmic tremor of the paretic limbs remains obscure, but since it is most unusual for vascular disease to produce such a picture, it is possible that the presence of a tremor might be indicative of tumor.



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THE *President's* PAGE

ARIZONA MEDICAL ASSOCIATION

RECENTLY, the Council has made several important changes at the central office of the Arizona Medical Association. It is important that you should know about these changes, and I am sure that you will approve of them, as I believe that they will increase the efficiency in the management of the affairs of the Association.

The Council has employed Paul Boykin as assistant Executive Secretary, to assist our able Bob Carpenter. Mr. Boykin will relieve Bob of the many routine duties that have taken up a major part of his time and energy. This will permit Bob to concentrate on the weightier problems, and allow him some time to travel around the state and to meet more often with the county societies and their members. Every member should meet Mr. Carpenter, — for he is not only a valuable, tireless, worker, but a very personable man also. Paul Boykin gives promise of being another valuable addition to our staff.

The other major change initiated by the council has been the removal of our office to 826 Security Building in Phoenix. These larger quarters provide adequate space for our ever-growing files. The space is shared, as is the expense, with the Arizona Board of Medical Examiners.

As an officer of the Association and member of the Council for over 10 years, I recognize the tremendous volume of business that is entailed in the management of the affairs of our Medical Association. The volume of incoming and out-going mail, telephone and telegraph messages is tremendous. Consider just the matter of transposing, typing or mimeographing the minutes of the meetings of the Council, House of Delegates, and the various Boards, committees and sub-committees; there are 27 major committees, and they meet several times a year. The Council meets at least 5 or 6 times a year, — probably more often. There is rarely a Saturday or Sunday during the year that is without an important meeting.

When the Legislature is in session, greater demands are made upon the energies and time of our personnel. They are also well-informed of the progress of legislation in Washington. Close contact is also maintained with the A.M.A. headquarters in Chicago, and with the Washington office of the A.M.A.

I have been able to point out to you but a few of the services performed by our loyal staff at the office of the Arizona Medical Association. I invite you to visit our new quarters at 826 Security Building and meet the competent people who serve you. I assure you that your visit will be rewarding to yourself, and appreciated by Bob, Paul, and Mrs. Olson.

Next month, I hope to be able to report to you on the results of our negotiations on the Medicare Program.

A. I. PODOLSKY, M.D., President
Arizona Medical Association, Inc.

Editorial

ARIZONA MEDICINE

Journal of
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CONTRIBUTORS

The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
5. Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.
6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.
7. Exclusive Publication—Articles are accepted for publication on condition that they are contributed solely to this Journal. Ordinarily contributors will be notified within 60 days if a manuscript is accepted for publication. Every effort will be made to return unused manuscripts.
8. Illustrations — Ordinarily publication of 2 or 3 illustrations accompanying an article will be paid for by Arizona Medicine. Any number beyond this will have to be paid for by the author.
9. Reprints — Reprints must be paid for by the author at established standard rates.

The Editor is always ready, willing, and happy to help in any way possible.

POLICY

EFFORTS are being made by the Editorial Board to emphasize the medical-legal, medical-economic and medical-social aspects more heavily than they have been in the past. Undoubtedly this policy will precipitate considerably controversy. This is welcomed and the editors of the Journal would appreciate receiving letters to the Editor which can bring out various viewpoints and be published in later issues of the Journal. We feel that one purpose this Journal can serve is to present problems that are unique to medical practice in the Southwest. Adequate knowledge and discussion of these problems should prove helpful.

TOBACCO AND CANCER

THERE has been much written about the effects of tobacco on males and females alike and a great many theories offered about the problem of smoking and carcinoma of the respiratory system. Most of the comments in the literature have been relative to the association or correlation between smoking and bronchogenic carcinoma. Not long after the initial comments about smoking and carcinoma of the lungs were made, there was an adverse effect on the tobacco industry and the consumption of cigarettes. Stocks in several large companies dropped several points and consumption of cigarettes was estimated to be off about ten per cent at one time. However, during the last year or so cigarette consumption again has risen and surpassed previous high figures.

Such a large industry naturally would not accept only words regarding such serious accusations but demanded scientific proof. Exact scientific proof that carcinogenic agents were present in cigarettes or tobacco smoking was not forthcoming, at least not up to the present time. However, there have been indications from certain laboratories that certain derivatives from tobacco may act as carcinogenic agents.

In rebuttal the tobacco industry has not been idle but has formed a Tobacco Industry Research Committee and only recently a pre-

liminary report was issued under the editorship of the scientific director Clarence Cook Little. The Tobacco Industry Research Committee (T.I.R.C.) has made many monetary grants distributed in eighteen states throughout the nation, to various institutions, and some fifty-five scientists who with their colleagues are participating in a carefully planned, well integrated scientific endeavor to help in solving of important health questions.

As of August 1956 the research grants distributed by the committee amounted to \$1,500,000. It is organized with a Scientific Advisory Board which comprises many illustrious names in various phases of medicine and related sciences. The sole purpose of the T.I.R.C. is to encourage and support qualified research scientists in their effort to learn more about such complex problems as heart disease and cancer, meanwhile refraining from premature judgments.

Three scientific areas of study or interest stressed in their report are lung tissue study, studies in heart circulation, and research in tissue culture. Also, the committee and the advisory board have set out to promote the development of acceptable standards governing work with tobacco derivatives to meet a challenging need among investigators. Their contention is that many experiments with tobacco smoke constituents have been or were being conducted under conditions bearing little if any relation to human use of tobacco. A defined range of methods and conditions was needed to give a greater degree of pertinency of the experiment to the experience of human smoking. To date substantial progress has been made in (1) preparation of standard tobacco derivatives for laboratory use, (2) definition of standard operating conditions for smoking machines, including control of temperature ranges in subjecting material to combustion, (3) further development and production of genetically controlled laboratory animals, particularly mice, with known characteristics, to be used in tobacco experiments.

The T.I.R.C. desires to have scientists work with the greatest freedom and without domination of any kind. It claims that it will make no attempt to direct the administration of the projects once started, to influence its course or to control its results other than to be as-

sured that the funds are properly expended for the purposes of the grant and that all findings are reported in accordance with the best scientific practices.

It would appear from the preliminary report of the T.I.R.C. that it exhibits a willingness to finance research in our health problems under the guidance of a recognized scientific advisory board. Whatever the outcome may be, the initial approach is certainly to be commended when it is recognized the public is not to be subjected to many rebuttals and unscientific claims by the tobacco industry in answer to the numerous scientific articles published against it.

C.T.R.

ORAL TREATMENT OF DIABETES

PRELIMINARY tests of the hypoglycemic sulfonamide derivatives indicated that these drugs might be effective in the treatment of diabetes mellitus, when given orally. The drugs (BZ-55 and Orinase) were soon found to be of little or no value in the management of the severe, brittle or juvenile types. The mode of action of these sulfonamides is still in doubt.

Even though these drugs may produce hypoglycemia in some subjects, it must be remembered that the simple normalizing of the blood sugar of a diabetic does not necessarily mean that the diabetes is controlled in toto. Because the complications of diabetes usually develop slowly, it will take many years, 15 or 20, to determine the effectiveness of any therapeutic antidiabetic agent.

Past experience with the sulfonamides has taught that those drugs are potentially toxic. Even though toxic reactions from these hypoglycemic-sulfonamides were absent or rare in early studies, as time has passed and their use widened, toxic reactions are becoming manifest. In some instances these reactions are very serious and possibly contributory to death. It is now known that these toxic reactions are not infrequent.

Insulin remains our best lifesaving therapeutic agent for the treatment of diabetes mellitus. Other drugs for the control of diabetes must remain in the hands of qualified research teams, to be proved by years of study.

L.B.S.

COUNCIL ACTION

COUNCIL of the Arizona Medical Association met in Phoenix September 23rd from 11:00 A.M. to 4:45 P.M. Among actions taken was approval of the supplemental insurance benefits in the Association-sponsored group sickness and accident policy carried by the National Casualty Company of Detroit. Individual contacts are to be made by the Arizona underwriters of this policy. Up to \$500.00 per month benefits for five years is now available to members of the Association, by taking advantage of basic coverage, extended coverage, and supplemental coverage.

The Medicare Program for medical care of military dependents by civilian physicians and hospitals (under certain prescribed circumstances) was discussed at great length by Council. A state-wide contract between the defense department and physicians is planned. A fee schedule committee was appointed, composed of the following members, Dr. Frank W. Edell, chairman:

Ernest A. Born, M.D.
 Carlos C. Craig, M. D.
 Hugh E. Dierker, M.D.
 John A. Eisenbeiss, M.D.
 Francis M. Findlay, M.D.
 George O. Hartman, M.D.
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 Paul L. Singer, M.D.
 William B. Steen, M.D.
 Oscar W. Thoeny, M.D.
 Otto E. Utzinger, M.D.
 Charles E. Van Epps, M.D.
 James Volpe, M.D.
 MacDonald Wood, M.D.


Council designated Blue Shield as the fiscal agent for the first year of operation under

Medicare. This is a bookkeeping function only.

The fee schedule committee met in Phoenix on Sunday, October 7th and arrived at a fee schedule for negotiation with the defense department. This fee schedule is based on the California relative value schedule as adopted by the Council of the California Medical Association on February 12, 1956.

The fee schedule recommended by the committee will be presented to the defense department in Washington later this year for final negotiation on a state-wide basis. December 8th is the target date for beginning operation of the Medicare Plan, as authorized by public law 569 passed by the last congress and signed by President Eisenhower on June 8th.

The medical economics committee along with those from other western state associations met in Denver with the task force from the department of defense on August 25th and 26th. This committee was expanded by council to the larger committee above. More details will be available to membership of the Association at a later date.



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TOPICS OF *Current Medical* INTEREST

RX., DX., AND DRS.

By Guillermo Osler, M.D.

SOME day you may be invited to speak to a **HIGH SCHOOL CLUB**. We warn you, in case you haven't known it, that the sponsor may be a group of girls who are aiming at a **NURSING** career, or a group of boys who intend to be **DOCTORS**. . . . They really are organized that early, and the result might someday be nurses and medics who are better (and sooner) prepared to face the decisions which have to be made at the time of graduation. . . . Put on your best clothes and manners, and tell them your best jokes if not the truth.

Kirby, Corpron, and Tanner use an uncommon word to call attention to 'hospital-acquired' infections, — **NOSOCOMIAL**. They may be serious, and deserve serious attention. . . . They stress their finding that coliform bacteria may cause infections in hospitals, in addition to those by staphylococcus. (*M.pyogenes*). The coliform infections may involve the urinary tract, are often antibiotic-resistant, and the problem is generally unrecognized. . . . **ARIZONA MEDICINE** now joins the **J.A.M.A.** in recognizing it.

A survey of reports at the **INTERNATIONAL PEDIATRIC CONGRESS** by Seligmann and Levine provides some large, wonderful trends at which we can wonder. . . . The only important contagious disease threat is polio, and you've heard of the threats to polio. The hazardous diseases of 1 or 2 generations ago (scarlet fever, measles, whooping cough, et al) are largely under control. Ear infections rarely become serious. The children with diabetes, TB, heart defects and blood diseases of the newborn have only to be recognized as such to have a good to excellent chance of control or healing. . . . The problems which remain include prevention of prematurity and birth defects, prevention and treatment of cerebral palsy, muscular dystrophy, mental retardation, leukemia, cancer, allergy, and certain renal diseases. . . . Now if we can just "keep the peace" and stay prosperous we can solve a few more of these puzzles and spread medical care around a bit more.

F. A. Simmons of Boston and Harvard reaches a few interesting conclusions in "Recent Advances in **INFERTILITY**", (an article which was published by the **MEDICAL ANNALS** of the District of Columbia). . . . 'Recent advances', he says, depend on how well one keeps up with the literature. There is a rapidly increasing number of meetings on the topic of sterility. The widely

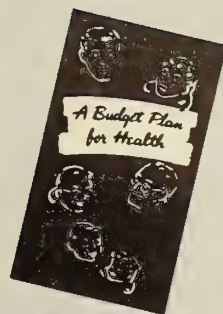
published stories in the lay press about the good effects of testosterone are baseless. About 4% show good results, not 85 or 90%. The English have reported very good results in several small series from the surgical correction of varicoceles. Thirty or 40% achieve paternity.

The para-medical journal '**HOSPITALS**' contained a wonderful story last month. In 1933 Dr. James Mackintosh of Scotland wrote himself a letter, to be opened when he became 65 years of age. In the years since then he has become a leading health educator, has often travelled to the U. S., and has been one of the greatest authorities on preventive medicine and hospital administration. . . . He opened the letter to himself in February 1955, and found that he had solemnly given himself several pieces of friendly advice. He urged his older self that he not become talkative, since it prevents learning; that he listen, really listen, and not simply look like it; that he not become suspicious of people's motives; that he avoid prying into the affairs of young people; that he give advice only when asked; that he not try to attract sympathy to himself; and that he not cling to his job after 65 like a barnacle, excusing it by the need to "see the job thru." . . . Dr. Mackintosh then wrote a reply, after he got the letter, to his younger self. He was grateful for the advice; he will try to continue to learn; and he had promptly retired from his job!

Upjohn's "Scope Weekly" tells the story of Johnny Longdon, a man who rides horses, and how he keeps riding at the age of 43 years. A hormone does it, says the article. . . . A year ago he was fighting his weight, as well as a wide-spread "bursitis." A San Francisco urologist decided to try out a **PARATHYROID** hormone. The result was a clearance of the discomfort, plus a strange dividend, — the loss of his weight control problem. . . . Longdon can thank the man for fixing him up so he broke the world's record for winners (4870), and maybe fixed him up so you won \$12.00 on one of his horses at Del Mar this year (tho it probably wasn't Longdon if the price was \$12.00). . . . The only weakness in this story might be the size of the doctor's series. The only other person he used parathyroid on was his office nurse.

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Stokes and Smolens of the University of Pennsylvania have found that repeated plasmapheresis on a donor (as often as once a week) results in a stimulation of ANTIBODY PRODUCTION up to a very high titer. These can be used for diagnosis or therapy. . . . They predict that the method could be useful in quite a number of infections. Human tetanus antitoxin is much more effective than that from horses, and the foreign protein reactions would be almost eliminated. Etc.

Dr. Jim Perkins of the NAT'L. TB ASS'N. sums up the current statistics on the disease, and the picture is better but not pretty. . . . 1,200,000 cases of TB in the U. S. . . . 800,000 are active and infectious. . . . 250,000 or more are not under treatment. . . . 80,000 new active cases are being reported per year. . . . 16,000 persons died of the disease a year ago. . . . The disease is a hazard. It is preventable. It is not under control.

Taylor County, Texas, has started a program to do MASS ELECTROCARDIOGRAMS on everyone. They began with a survey of all employees on the Abilene 'Reporter News'. . . . The county Heart Association is in back of the drive. They hope to make it "as commonplace as TB screening," but we hope it will be more so. TB screening is far from widespread, in the first place, even tho the disease is a hazard to more than the possessor. On the other hand, cardiovascular diseases top the list of morbidity and mortality statistics, so the procedure is a logical one. . . . We can only hope that some cardiologists don't fight the use of ECGs as some radiologists fight case-finding films. One attitude would be as silly as the other, both from the dollars and 'sense' standpoint.

This pathology-etiology item may not be world-shaking, but it is quite amazing in a small way. . . . The CAUSE OF DEATH IN LEPROSY should most often be toxicity, or pneumonia, or some other infection. It isn't. . . . They say it is quite commonly amyloidosis, and the reason (just as for amyloid deposit in other situations) is uncertain.

We have picked the brains of three 'arctic-type' scientists who spoke at a Trudeau Society meeting in Los Angeles on HYPOTHERMIA, or 'cooling,' in surgery. They were Drs. (John C.) Jones, Zinn, and Warnock. . . . The chief aim of 'cooling' is to slow down the metabolism and decrease the need for oxygen. . . . The methods have included cooling the blood, flooding a pleural cavity with a cool solution, wrapping the patient in coils, and packing the patient in ice. The last-named is apparently best. . . . The temperature is lowered to a level between 31 and 16 degrees C. (87-80F). The exact level depends on the need. The patient is slowly cooled (1 degree per 15 minutes) to the proper level by anterior and posterior application of ice; he is removed from

the pack before surgery; the temp. 'drifts' about 4 degrees lower after removal from the ice; he stays cold for 5 to 9 hours after unpacking. . . . No sedation or premedication is used before cooling, but a needle is put into an ankle vein for later entrance of fluids and drugs; a nitrous oxide and oxygen anaesthesia is started; curare is given for intubation; and the patient is usually digitalized. A thermo-couple is placed in the rectum. . . . As 'cooling' occurs the patient becomes very pale, the pupils dilate, the jaw sets, the pulse slows, and the audible blood pressure goes, tho fluctuation on the dial persists and the level is constant. The patient shivers at a certain level, and the temp. is carried just below that level. Shivering is a warning mechanism, and is also obvious on the ECG. . . . Shock is hard to recognize, so that excess transfusion is wise. No post-op. warmup is used, since one must avoid chillblains, skin-burns, etc. . . . The uses are diverse, and include numerous non-cardiac indications. Cardio-vascular reasons for hypothermia include cyanotic bad-risk infants, septal defects, Tetralogy of Fallot, thoracic aneurysm, vascular stenosis (Leriche syndrome), etc. . . . The procedure will allow as long as 1½ to 2 hours, with the brain or kidney blood supply shut off. The maximum time for heart surgery, however, is 7 to 12 minutes. . . . The hazards include poor control, and a skilled team is necessary for cooling, anaesthesia, and surgery. Ventricular fibrillation is the most dreaded post-op. hazard; potassium chloride is used to produce a cardiac standstill then normal rhythm is induced. Post-op. bleeding may occur; chillblains, perhaps due to fat damage, may follow; and a neuritis is occasionally seen. . . . The method is actually still under investigation, with blood chemistry being studied, attempts to find theories to fit the facts, and attempts to minimize the hazards.

SUPPLEMENTAL SICKNESS AND ACCIDENT BENEFITS

COUNCIL and the medical economics committee are considering plans for additional group sickness and accident insurance benefits, with a view to providing a total of five hundred dollars per month income for disability from sickness or accident.

In April, the medical economics committees recommended to council that this move be undertaken. On April 25, council directed that the membership be polled. (The costs were borne by the National Casualty Co.) One-third of the members replied; two-thirds of those replying favored obtaining this additional benefit. More details will be available when further plans are concluded, and will be published in the Journal.

little

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25¢ Bottle of 48 tablets (1¼ grs. each).

We will be pleased to send samples on request.

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of Sterling Drug Inc.

1450 Broadway, New York 18, N. Y.

NEW

ATARAXOID is a unique, new combination of STERANE and ATARAX, which now permits simultaneous symptomatic control and reduction of attendant anxiety and apprehension in rheumatoid arthritis and other indications.

The added tranquilizer control, desirably easing mental stress, also directly assists clinical progress. It minimizes the chance of exacerbation related to emotional strain and facilitates patient confidence and cooperation in the therapeutic program toward maximum rehabilitation.

ATARAXOID exerts the anti-rheumatic, anti-inflammatory activity of STERANE distinctly superior to previous steroids, effective in radically reduced dosage, and with minimal disturbance of electrolyte and fluid metabolism.

The ataractic effect is a central neuro-relaxing action — the result of a marked cerebral specificity — free of mental fogging and devoid of any major complications: no liver, blood or brain damage. This peace-of-mind component is also used in the lowest dosage range.

Supplied: Each green, scored, ATARAXOID oral tablet contains 5 mg. prednisolone (STERANE) and 10 mg. hydroxyzine hydrochloride (ATARAX). Bottles of 30 and 100.

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*Division, Chas. Pfizer & Co., Inc.
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**the first
and only
ataraxic-corticoid**

araxoid*

prednisolone and hydroxyzine



combining the newest, safest
tranquilizer, ATARAX® + the newest, most effective
steroid, STERANE®
(prednisolone)

simultaneously controls
the symptoms and the
apprehension

**In Rheumatoid Arthritis,
other collagen diseases,
bronchial asthma and
inflammatory dermatoses**

The History of Medicine in Arizona

GEORGE EMERY GOODFELLOW, M.D.

(Tombstone 1880-1891)

Tucson 1891-1898

DR. GOODFELLOW was born December 23, 1855 at Downieville, Sierra County, California. He was the son of Milton J. and Anna Amanda (Baskin) Goodfellow — both parents being natives of Pennsylvania. His father was a prominent mining engineer, who had studied both medicine and dentistry. His mother was the daughter of Dr. John Baskin — a well-known physician of Meadville.

In 1865 the family moved from Downieville to Austin, Nevada. During 1868-1870 George lived with an aunt at Meadville and attended school. Then for one year he attended the California Military Academy at Oakland. Later for one year he was a student at the University of California in the Civil Engineering Department. He declined an appointment to West Point, but later accepted the appointment, from Nevada, as Midshipman to the United States Naval Academy at Annapolis, entering June 12, 1872. Here he was the champion boxer. But on December 12, 1872 he was expelled for the hazing of a Negro cadet. The Negro seems to have been responsible for the encounter and he was himself dismissed a few months later. From 1872-1876 he was a student at the Medical Department of the University of Wooster, Cleveland, Ohio, graduating February 23, 1876. A few months later he was married to Miss Katherine Colt of Meadville. In November of that year they went to Oakland, California. In a short time his father suggested he come to Prescott, Arizona, to be the doctor of a mine of which the father was in charge. He was in Prescott for about 2 years. For a short time he was an acting assistant surgeon at Whipple Barracks. But in 1879 he again became a "contract surgeon" and was stationed at Fort Lowell. On September 15, 1880, he resigned to engage in private practice at Tombstone.

TOMBSTONE 1880-1891

All this becomes pertinent as bearing out Dr. Goodfellow's statement, viz., that he had presumably had a greater practice in gun-shot wounds of the abdomen than any other man in civil life in the country. I think we may also



George Emery Goodfellow, M.D.

conclude that this extensive practice laid the proper foundation, both in experience and courage, for him later to attempt operations — new to himself and everyone else.

Leading surgeon — During his residence in Tombstone Dr. Goodfellow was the outstanding surgeon of Arizona.

Early residents of Cochise County still relate the case of a young man who was "mad" — roaming wild and nude in the mountains. His friends took him to Tombstone where Dr. Goodfellow operated upon his skull. In a short time he returned home "clothed and in his right mind."

Dr. Goodfellow was also a pioneer in plastic surgery. In June 1881 there was a disastrous fire in Tombstone. Mr. George W. Parsons of Los Angeles writes of his experience: "I was knocked senseless by a dislodged beam and a large splinter had entered just under the skin glancing upward and just missing the eye, face quite flattened and nose all over it. Dr. Goodfellow made a plaster cast, cut away the deformity in the cast and then cut my nose loose from the bone and tacked it up in place

so that the cast, with the aid of a wire run through my nose, held it in place. I eventually recovered emerging with a fine Roman nose, free from disfigurement."

Coroner — For the 10 years Dr. Goodfellow also served as coroner. Some of his acts in that capacity brought him as much notoriety as his surgical ability did fame. Possibly the most notable — quoted in all the newspapers in the country — was the following: At 8:30 A.M. February 22, 1884, John Heath — a murderer — was lynched on Toughnut St., Tombstone. Dr. Goodfellow, as a coroner, was accused of preparing the verdict of the jury: "We the coroner's jury of Tombstone, Cochise County, Arizona, find that the deceased came to this death from emphysema of the lungs; a disease common in high altitudes; characterized by an excess of air in the cellular spaces; due to strangulation or otherwise."

Earthquake — On May 3, 1887, there was a severe earthquake in Bavispe, Sonora, Mexico and Dr. Goodfellow took a relief party of the Geologic Survey into the district a month later. They visited regions where the natives had never seen a white man or a horse and wagon. None of the injured had received aid. As a result of his surgical work Dr. Goodfellow was considered by them as a saint and was thereafter called by them "el Santo Doctor". In appreciation of this service, a horse, Kentucky bred, blooded and gaited, was presented to Dr. Goodfellow with due formality and ceremony by a small body of Mexican soldiers sent from Mexico City by President Diaz, who later became one of Goodfellow's close friends.

TUCSON 1891-1896

When Dr. Goodfellow moved to Tucson, October 23, 1891, my friend — Dr. I. B. Hamilton, of Los Angeles — succeeded him at Tombstone. About 5 months later Hamilton wrote me (Dr. Bledsoe) that he was planning to join Goodfellow here and asked me to take his place in Tombstone. After 2 weeks of correspondence he decided to remain there and I came here as assistant to Goodfellow April 20, 1892.

Southern Pacific Surgeon — Before his removal to Tucson Dr. Goodfellow had accepted the position of Railroad Division Surgeon — successor to Dr. Handy. He held this position till he removed from the Territory in 1896.

Though the railroad men might cuss at not being able to find him the minute they wanted him, no one ever questioned his ability.

Of my six months' close association with Dr. Goodfellow four things stand out conspicuously.

Surgical week — At the end of my first month here Dr. Goodfellow had a "Surgical Week". He had been saving up cases from Tombstone, Bisbee, and Tucson. He had his friend — Dr. Francis Haynes, of Los Angeles — come here for a week and two major operations were performed each day. This was more operative surgery of this kind than Tucson had seen in its two centuries of existence.

Conducted Hospital Here — During his residence in Tucson Dr. Goodfellow purchased the property now known as the Orndorff Hotel and for about a year conducted it as a hospital, doing his surgical work there.

Arizona Health Officer — From 1893-1896 Dr. Goodfellow served as Territorial Health Officer, under Gov. L. C. Hughes, and everybody agreed that no more competent man could have been chosen.

First Appendectomy in Arizona — Dr. Goodfellow is credited with having performed the first appendectomy in Arizona. I know of no man so likely to have had this distinction, but have no knowledge of the date.

A PIONEER IN PROSTATECTOMY

It was while Dr. Goodfellow was in Arizona that he did pioneer work in this operation.

Initial Case — He said: "In 1891 I made a pure perineal prostatectomy, the first as far as known to me deliberately devised and carried out." He places the date as in the week of September 29, 1891, which would be during his last month in Tombstone. If this be true, then he was the first man in the world to perform this operation. This initial case, with subsequent ones, was to be reported at a meeting of the Southern California Medical Society December 3, 1896. But Dr. Goodfellow was in New York at the time and the paper was not presented or published. These early cases were not reported till 1901. Later all his records were destroyed in the San Francisco fire. So some have questioned his priority.

Testimony of Others — (1) At the meeting of the Arizona Medical Association held in Tucson in 1921 the visiting physicians attended the regular Chamber of Commerce luncheon.

When I introduced Dr. Cecil, well-known urologist of Los Angeles, his first words were an expression of his pleasure at being in Tucson, the home of Goodfellow, the father of prostatectomy.

(2) Dr. Hugh H. Young — for many years the leading authority in the United States upon this subject — not only accepted Goodfellow's claim of originating perineal prostatectomy by midline incision but states: "Goodfellow deserves the credit of being the first to make a success of prostatectomy."

Early Prostatectomy Cases — Dr. Goodfellow performed several early operations of this kind in Tucson. Some of them were notable both because it was pioneer work in a new field and because of the prominence of the patients. In several such I gave the anesthetic.

The first case — early in 1893 — was Mr. E. B. Gage — a prominent mining man of Tombstone. Dr. Goodfellow used the scalpel only to get through the skin and perineal muscle. All further dissection up to the gland and its enucleation were done by the index finger. In a remarkably short time the gland was delivered intact. It was just about the size of a chestnut and of normal pink color. A very few weeks after the operation I met Mr. Gage in the corridor of the hospital and he expressed his delight at the beneficial results of the operation.

Mr. Gage had a friend, Eames — a prominent lawyer of Chicago — who soon came here for the operation. Conditions were quite different from the case of Mr. Gage. The gland was at least two and one-half times larger, dark red in color and quite friable — about one-tenth or one-eighth coming away piece-meal.

RECORD IN SPANISH-AMERICAN WAR

Title and Authority — At the outbreak of the Spanish-American War, when his friend General William R. Shafter called he gave up his practice and went to his aid. Army officers have denied that he had any standing in the army and at the Dodge Commission investigation referred to him as "a civilian with no rank or authority". But no one else ever questioned his position.

Interpreter — He spoke Spanish fluently — better than the official interpreters. Possibly this qualification led to his being chosen envoy or intermediary for the army. During the two weeks between the battle of San Juan and El

Caney (July 3) and the surrender of General Toral (July 17) time and again, blindfolded and under a flag of truce, he was taken to the Spanish camp, and many, in a position to know, have given him chief credit for the surrender of Santiago de Cuba.

Citation — His services were officially recognized in the following citation (February 30, 1900): "July 1898 Dr. G. Goodfellow, civilian and volunteer aid to General William R. Shafter, for especially meritorious services, professional and **military** during the campaign in Cuba."

SAN FRANCISCO 1900-1907

Upon his return from the Spanish-American War Dr. Goodfellow located in San Francisco, remaining there for seven years. During this time he devoted himself exclusively to his specialty — prostatectomy. He had made a "triumphal tour" across the country, demonstrating his operation at numerous surgical centers — thus becoming a national figure. In 1902 he was guest speaker before the California Academy of Medicine and presented a paper upon his specialty. In 1904 he reported 78 perineal prostatectomies on patients ranging from 45 to 84 years of age with only two deaths, one from sepsis and the other shock.

GUAYMAS 1907-1910

In 1907 Colonel Randolph appointed Goodfellow Chief Surgeon of the Southern Pacific of Mexico, with headquarters at Guaymas. During the first year in his new position offices were opened in Tucson for the care of local employees, and he was an occasional visitor here and renewed his acquaintance with former friends.

He remained at Guaymas till 1910. In March of that year he developed multiple neuritis, suffering excruciating pain. He was removed to a hospital in Los Angeles. In April wrist-drop occurred. He then told friends if he was doomed to be a cripple and unable to operate, he did not care to get well. During the months of his final illness he received most attentive care from the late Dr. C. W. Fish — for many years his brother-in-law, later his son-in-law. He died December 7, 1910 at Los Angeles.

Thus passed not only the most brilliant and versatile surgeon who ever practiced in Arizona but also one of the picturesque characters of Arizona's early history.

PUBLICATIONS

During a period of nearly 30 years (1879-1907) about one dozen articles of his appeared in the leading medical and surgical journals of the country. About half of them were upon some phase of his specialty — prostatectomy. A few of the earlier ones were strictly medical and the last: "The Gila Monster Again" appeared in the Scientific American. As the majority of his articles were reports of his own work, they were accepted as authoritative.

ANTIDOTE AGAINST NERVE GAS

DEVELOPMENT of the first effective antidote against wartime use of deadly nerve gas, was announced March 13 by a team of Columbia University biochemists. The antidote has protected 100 percent of the animals exposed to doses of nerve gas that would have killed them in less than five minutes. The new compound was developed and synthesized by a group headed by Dr. Irwin B. Wilson at Columbia's College of Physicians and Surgeons.

The chemical is named 2-pyridine aldoxime methiodine — or PAM for short. It is a crystalline solid that dissolves in water to yield a clear yellow solution, and was reported to be "easily and inexpensively synthesized," and non-toxic in amounts necessary to preserve life. (details) (William L. Laurence — N. Y. Times 3/14 1249-04)

TRANQUILIZING DRUGS

THE FOLLOWING excerpts are reprinted from a recent bulletin on the use of tranquilizing drugs published by the APA's Committees on Research Therapy and Public Information. It is so timely that it is reprinted here.

"The profession - - - recognizes with enthusiasm the development of the tranquilizing and other drugs for the treatment of psychiatric disorders over the past four years. It seems clear that the drugs are useful adjuncts in the psychiatric treatment of certain patients in private practice and on an outpatient basis in clinics and hospitals, though the extent and the conditions under which this practice will prove sound remains to be confirmed through prolonged and careful study.

"Psychiatrists are at the same time concerned

about the apparently widespread use of the drugs by the public for the relief of common anxiety, emotional upsets, nervousness, and the routine tensions of everyday living. It is reported that 35,000,000 prescriptions for the drugs will be written in 1956, and a market research firm states that 3 of 10 compounds prescribed most frequently by physicians in 1955 were tranquilizers.) Numerous articles in the public prints may be pointed to as evidence that the drugs are widely viewed as medicines for the relief of everyday tensions.

"Casual use of the drugs in this manner is medically unsound and constitutes a public danger. The tranquilizing drugs have not been in use long enough to determine the full range, duration, and medical significance of their side effects. Use of these drugs is no more to be encouraged than use of any other drug except where proper medical diagnosis determines that a drug is indicated to maintain the life and functioning of a person. **The prescribing of the drugs for emotional illnesses carries with it an obligation for continuing appraisal and supervision by physicians fully aware of the psychiatric symptoms involved and the potentials of their course of development, alteration or remission.**

"At the same time, it is important to be aware of subtle pressures that combine to foster public misunderstanding and misuse of the drugs. There is the eagerness of the public and of physicians themselves for 'good news' about a new treatment for psychiatric disorders. This tends to foster popular stories based on optimistic reports of early and limited research findings with the drugs, before such findings can be reproduced and validated by other colleagues. There is normal competition among pharmaceutical houses to refine, promote, and sell their own particular products. This competition should not involve physicians in public relations enterprises directed towards the premature announcement of 'successful use' of particular products.

"Persons engaged in any form of research or evaluation of therapy should be most dispassionate and objective in their pronouncements. It is suggested - - - to be particularly alert to personal pressures (both internal and external) and circumspect in their announcements of early experimental results with the drugs."

Notes From Desk Of The Executive Secretary

Arizona AMEF Contributions

It is gratifying to learn that during the month of August \$665.87 was contributed to the American Medical Education Foundation fund through the efforts of our Woman's Auxiliary. Pima County heads the list with \$295.00; Maricopa followed with \$117.00; Yavapai \$90.00; and Yuma \$79.87. The state auxiliary added another \$84.00. Again the dependability of our fair ladies has been demonstrated. Congratulations and many thanks!!

AMEF — Advisory Member Appointment

The Board of Directors of the American Medical Education Foundation taking advantage of its by-laws provision has created a new membership in the Foundation.

"Advisory Members" are being chosen for their active interest in the Foundation and their prominence in the medical community. From this group will be selected a National Council which will aid and advise the Foundation on the best policies to pursue to assure its success. On recommendation to the Board of Directors, Doctor James D. Hamer of Phoenix, our Delegate to the AMA, is one of a first group elected to this membership. Congratulations — Doctor Hamer.

Hospital — Physician Relations

A.M.A. President Dwight H. Murray, speaking before the 58th annual convention of the American Hospital Association in Chicago during September had this to say: "I would be less than frank if I did not say that the medical profession is concerned by and vitally interested in the attempts by certain hospitals . . . direct or indirect . . . to inject themselves - - - in our opinion improperly - - - into the practice of medicine." Doctor Murray said that the hospital control of medical practice cannot possibly serve the best interests of the patients, but will only restrict or destroy the professional freedom and independence of the physician to practice the science and art of healing.

DOCTOR DRAFT

When the special doctor draft expires next July 1, physicians and other professional personnel covered by it still will be subject, up to age 35, to the regular draft. To discuss procedures to meet military needs after that date, the Defense Department has started conferences with representatives of groups involved, including American Medical Association, American Dental Association, the Association of American Medical Colleges and the four surgeons general — Army, Navy, Air Force and U. S. Public Health Service.

Although all physicians registered under the regular draft technically are liable for service up to age 35, few if any of those over 30 are apt to be called, as Defense Department estimates that the majority of its needs can be met by recent graduates of medical schools. One of the questions is whether any change in the basic Selective Service act will be necessary to facilitate the selective call-up of certain physicians and other specialists — including scientists — who are deferred for educational and occupational reasons.

| THE TEN LEADING CAUSES OF DEATH — ARIZONA — 1955 INCLUDING DEATH RATES | | | |
|--|------------------|-------------|--|
| Cause | Number of Deaths | Death Rate* | |
| 1. Diseases of Heart | 2,168 | 222.1 | |
| 2. Malignant Neoplasms, Including Neoplasms of Lymphatic and Hematopoietic Tissues . . . | 797 | 100.3 | |
| 3. Vascular Lesions Affecting Central Nervous System . | 602 | 61.7 | |
| 4. Certain Diseases of Early Infancy | 483 | 49.5 | |
| 5. Accidents — Other Than Motor Vehicle | 342 | 35.0 | |
| | | | 6. Motor Vehicle Accidents 321 32.9 |
| | | | 7. Influenza and Pneumonia 308 31.6 |
| | | | 8. Tuberculosis 256 26.2 |
| | | | 9. Congenital Malformations 155 15.9 |
| | | | 10. Symptoms, Senility, and Ill-Defined Conditions .. 133 13.6 |
| | | | All Other Causes 1,771 |
| | | | Total Arizona Deaths . . . 7,518 770.3 |
| *Deaths per 100,000 estimated population | | | |
| Estimated Arizona civilian population 976,044 — July 1, 1955 | | | |
| Special report prepared for Arizona Medicine by R. M. Perkins, Bureau of Vital Statistics. 9-6-56. | | | |

Journal Report:

Hypertensive symptoms relieved
in 96% of patients

"Comparison of pentolinium [ANSOLYSEN] with other preparations in 25 patients with severe essential hypertension, for whom all other methods of management had failed, showed that pentolinium is the most effective of available agents in reducing dangerously high blood pressure to the desired levels, and in modifying some of the complications of hypertension, as cardiac decompensation, cardiomegaly and retinopathy. . . .

"In 96 per cent (24 patients) clinical symptoms were relieved and the blood pressure maintained at comfortable levels. . . ."

ANSOLYSEN®

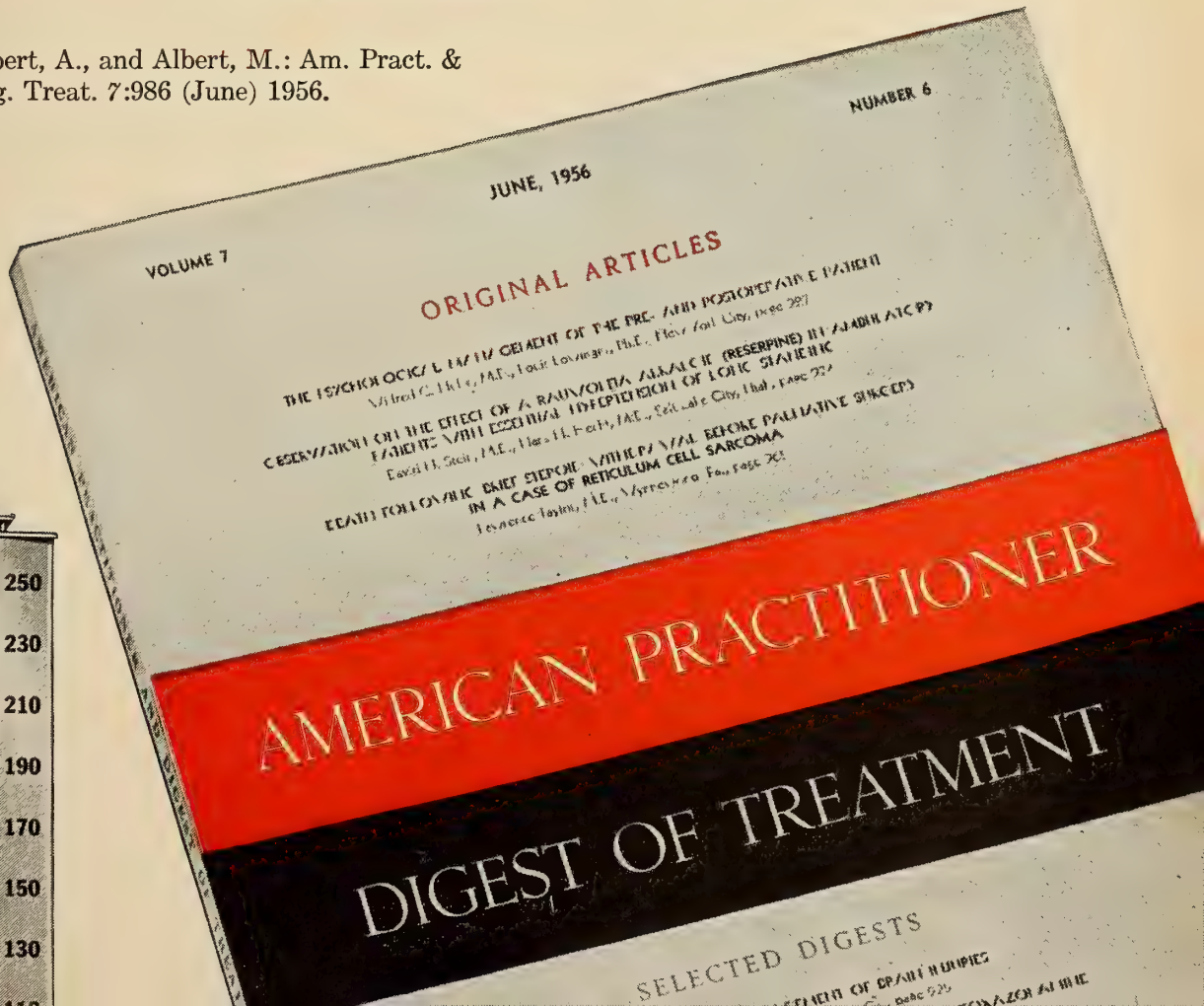
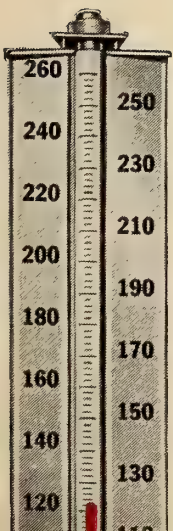
TARTRATE

Pentolinium Tartrate

Lowers Blood Pressure



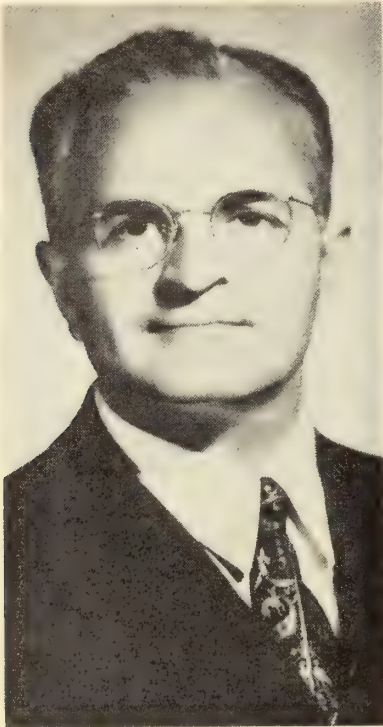
- 1. Albert, A., and Albert, M.: Am. Pract. & Dig. Treat. 7:986 (June) 1956.



1957 ANNUAL MEETING
Arizona State Medical Association
Stardust Hotel, Yuma, Arizona
April 10-13, 1957

INTRODUCING Leon Goldman, M.D., Chairman of the Department of Surgery, University of California School of Medicine in San Francisco, and participant in our 1957 Clinical Session.

Doctor Goldman is a native son of San Francisco, having been born there on February



Leon Goldman, M.D.

14, 1904. He received his Bachelor of Arts degree from the University of California in 1926, his Doctor of Medicine degree from the same institution in 1930, and his Master of Science degree in physiology from Northwestern University in 1939. He served his internship and residencies in surgery at the University of California and San Francisco hospitals from July 1, 1929 to June 30, 1933, and was a graduate student in physiology at Northwestern University Medical School from September 1938 to July 1939. Doctor Goldman has been affiliated with the University of California Medical School since July 1, 1933 when he became an instructor in surgery. He received his professorship in surgery in July 1950 and continues in that capacity to date. He has been Chairman of

the Department of Surgery since July 1, 1956, together with Associate Dean of the School of Medicine.

Doctor Goldman serves on the staff of many San Francisco hospitals, is associated with a large number of medical societies and medical school committees. He became a Diplomate of the American Board of Surgery in 1940.

**AMERICAN MEDICAL
 ASSOCIATION**

ACORDIAL invitation is extended to all physicians in the West to attend the A.M.A. Clinical Session in Seattle November 27-30. An outstanding program has been arranged, and excellent hotel accommodations are available.

The center of activities will be Seattle's Civic Auditorium, where scientific sessions will be held and exhibits will be displayed. Conveniently located, the auditorium is easily accessible from downtown hotels, and transportation will be available for commuting to and from meetings. A cafeteria will be operated in the auditorium for midday meals.

Clinical Session headquarters will be the Olympic Hotel, where House of Delegates sessions and meetings of the Board of Trustees, Councils and Reference Committees will be held.

The scientific program will be beamed at the general practitioner, and subjects have been carefully chosen to be of interest and practical value. The program will include panel discussions, individual papers, motion pictures and closed-circuit television clinics.

Panel discussions will cover such subjects as hypertension, hemolytic anemia, prenatal care, problems of aging, epilepsy, low back pain, liver disease and vascular disorders. Twenty topics will be considered by panels of men prominent on the national scene and in the Northwest.

There will be 45 papers, considering fluid balance, urological problems, office psychiatry, varicose veins, fractures, diabetes, heart disease, and many other subjects. Contributors will include well-known medical educators and practicing physicians from all parts of the country.

The television clinics will include both wet (operative) and dry (non-operative) clinics. Talent will be drawn largely from Seattle because of the necessity of rehearsals and frequent briefing. There will be clinics on block anesthesia, treatment of burns, bleeding problems, intestinal obstruction, caesarean section, hand sur-

gery, hysterectomy, vein stripping and other subjects.

Scientific and technical exhibits have been arranged through A.M.A. headquarters. They promise to be as educational and interesting as in the past. Eighty-five scientific exhibits of the highest caliber will be on display.

Prepaid medical service plans of Washington, Oregon and Idaho will sponsor a hospitality suite in the headquarters hotel for three days during the session. An exhibit showing the prepaid plans' services to the public will be on display in the hospitality suite.

Plans have also been made for Auxiliary activities during the Clinical Session. Sight-seeing tours and other events are on the agenda.

Physicians are urged to make their reservations early. A reservation form will be found in the current issue of the Journal of the A.M.A. All reservations in Headquarters Hotel, The Olympic, must be made through A.M.A. headquarters.

1957 CANCER SEMINAR

Arizona Division, American Cancer Soc.

Phoenix, Arizona

January 10, 11, 12

Paradise Inn

Thursday Morning

Bone Tumors

David C. Dahlin, M.D.

J. Vernon Luck, M.D.

Eugene P. Pendergrass, M.D.

Mediastinal Tumors

Joseph Gale, M.D.

L. H. Garland, M.D.

Hans G. Schlumberger, M.D.

Thursday Afternoon

Ovarian Tumors

Dominic A. DeSanto, M.D.

L. H. Garland, M.D.

Joe Vincent Meigs, M.D.

Alfred Gelhorn, M.D.

Friday Morning

Relationship of Animal Tumors to Human Tumors

Hans G. Schlumberger, M.D.

Recent Advances in Chemotherapy of Malignant Diseases

Alfred Gelhorn, M.D.

Report of the President of American Cancer Society

David A. Wood, M.D.

Friday Afternoon

Clinical-Pathological Seminar

The Stomach

Joseph Gale, M.D.

David C. Dahlin, M.D.

Eugene Pendergrass, M.D.

Saturday Morning

Cytologic Diagnosis of Cancer of the Cervix

Joe Vincent Meigs, M.D.

Dominic A. DeSanto, M.D.

David C. Dahlin, M.D.

David A. Wood, M.D.

Use of Isotopes in Cancer Diagnosis and Therapy

John Z. Bowers, M.D.

L. H. Garland, M.D.

EDITOR'S NOTE: The agenda for the 1957 Cancer Seminar is outlined above, as announced by the Arizona Division of the American Cancer Society. This Seminar has increased in popularity each year and rightly so for the data presented is making this a clinical session well worth the attendance of the majority of the physicians here in the Southwest. We would like to strongly urge you to attend these excellent discussions.

SERVICE POLICY

ARIZONA DIVISION — AMERICAN CANCER SOCIETY

DR. PAUL B. Jarrett, Chairman of the Service Committee of the American Cancer Society, Arizona Division, announced today that as part of its expanding program for Cancer Control, the Division has developed a new Service Program.

This program is to be put into action throughout the State as volunteer committees are organized. Its success depends on the volunteer help of many Doctors, the Medical Society, and the laymen. This help has already been pledged in most counties.

The purpose of the program is to provide professional and volunteer services to the indigent and medically indigent cancer patient, which will relieve unnecessary suffering and eliminate untimely death. This service to be provided as efficiently as possible through volunteer aid and to the extent to which funds are available after the needs of Research and Education have been met.

The Society's first step in putting the plan

into effect will be to survey the needs as indicated by the County Medical Society, Tumor Boards, Welfare Agencies, Hospitals, County Health Departments and the Voluntary and Governmental Agencies.

The Service Committee is now in the process of preparing a Manual, which will be a guide for the County Units as they activate this program.

Policies formulated by the Service Committee include the following:

1. American Cancer Society policy does not permit the payment of hospital bills, doctor's bills, x-ray or radium therapy, or nursing service while patient is in the hospital.

2. No funds of the Society will be used for an indigent patient unless all other possible sources of aid are not available for this patient.

3. In order to avoid duplication of existing community facilities the Society does not provide financial aid to patients eligible for County assistance; or to those eligible under any other program; or to patients who are financially able to meet their own obligations.

- A. Whenever possible a patient should be referred to the proper community agency for assistance.

- B. All indigent cases to receive financial aid be specially cleared with the local Welfare Department.

4. That no direct financial aid be given to a medically indigent patient. Payment can only be made to an Institution, Company or Agency.

5. The total expenditure for any one case shall not exceed \$75.00 per year.

6. Financial aid can only be given for:

- A. Medication (excluding experimental drugs).

- B. Nursing — Visiting Nurse Service and Practical Nurses.

- C. Dressings — free to all cancer patients, regardless of income, where requested by his physician.

- D. Loan Closet equipment, hospital beds, wheel chairs and etc.

- E. Transportation (for diagnosis and treatment).

- F. Rehabilitation.

- G. Referrals of patients to other community agencies for assistance.

- H. Consultation for families with cancer problems (Information Centers).

7. No Case shall receive aid unless patient is under the care of a physician who is a member of the Arizona Medical Association.

8. Where adequate services are available within the State, no aid will be given for treatment or diagnosis out of the State of Arizona, except by prior approval of the Service and Executive Committees.

9. That in every County in the State, where adequate facilities exist, there should be a Tumor Consultation Service Committee, as defined by the College of Surgeons. That the Society shall offer its help to whatever extent it is available to local Medical Societies who wish to establish such a service.

10. That a Service Committee should be a standard part of each County Unit Organization, and that such a Committee should use the above rules as a guide for eligibility and care, since these rules have been recommended by the State Service Committee and approved by the State Board of Trustees.

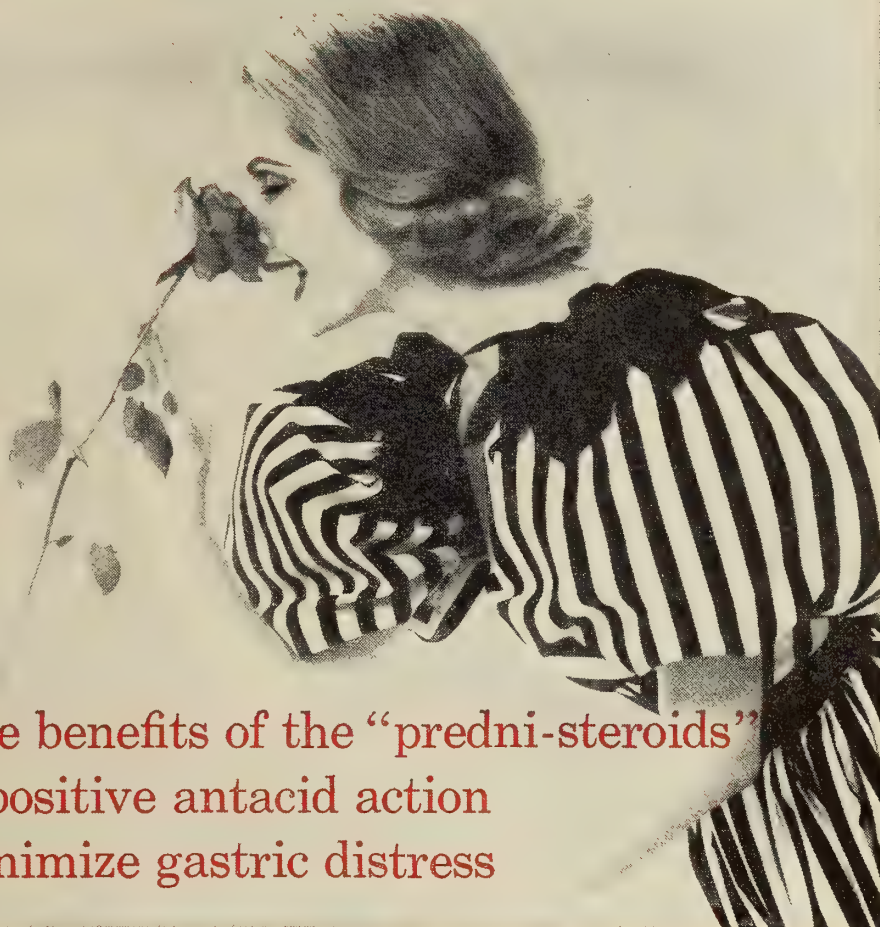
The Board of Trustees of the Arizona Division, has defined a medically indigent patient as: "That individual who is unable to pay for his medical care and is not acceptable to the County or other Welfare Agencies for aid".

Because of the limitation of funds and the importance of meeting the financial requirements of the Research and education programs, this special assistance program to the medically indigent must necessarily be an extremely limited one. It is estimated that there are 3,000 cases of cancer at any one time in Arizona. The first purpose of the Society is to save lives through a program of Research and Education. The Education program has first priority on funds to be expended in the local Unit program.

The new Service Program and Policy has been studied by the medical members of the Board of Trustees of the Arizona Division, American Cancer Society, and has met with their full approval.

Members of the State Service Committee are: Drs. Paul B. Jarrett, Melvin W. Phillips, Ian M. Chesser, Abe I. Podolsky, Zenas B. Noon, William E. Bishop, Warren Nelson, Guy Atonna, Douglas D. Gain, J. D. Hamer, and Mrs. Merle Farmer, Laura Dunshee, Margaret Maleady, Jean Reid, Grace Seaman, and Mr. Frank O. Williams.

in respiratory allergies



all the benefits of the "predni-steroids"
plus positive antacid action
 to minimize gastric distress

ROUTINELY ACHIEVED WITH

'Co-Deltra'

(Prednisone Buffered)

Multiple
Compressed
Tablets



Clinical evidence^{1,2,3} indicates that to augment the therapeutic advantages of prednisone and prednisolone, antacids should be routinely co-administered to minimize gastric distress.

References: 1. Boland, E. W., *J.A.M.A.* 160:613 (February 25) 1956. 2. Margolis, H. M. *et al.*, *J.A.M.A.* 158:454 (June 11) 1955. 3. Bollet, A. J. *et al.*, *J.A.M.A.* 158:459 (June 11) 1955.

2.5 mg. or 5 mg.
prednisone or
prednisolone with
50 mg. magnesium
trisilicate and
300 mg. aluminum
hydroxide gel.

'Co-Hydeltra'

(Prednisolone Buffered)



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 DIVISION OF MERCK & CO., INC.
 PHILADELPHIA 1, PA.

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SOCIAL SECURITY

IN RECENT months many physicians have heard from patients about the disability freeze provision in the social security law. This provision, added to the old-age and survivors insurance program in 1954, permits people who have prolonged total disability to apply to have their social security records frozen for the period of their disability. Thus, the time when they could not work and so had no earnings credited to their social security accounts does not count against them in determining their rights to benefits, nor the amount of benefits which will be payable to them at age 65, or to their families in case they should die.

Before a worker's social security record can be frozen, he has to meet certain work requirements. His social security record up to the time of his disability must show that he was in fact a worker, with a fairly regular and recent work history. In addition, he must be shown to have a medically determinable physical or mental impairment severe enough to keep him from engaging in any substantial gainful activity — one which has existed for more than 6 months, and is expected to last indefinitely or end in his death.

Securing The Medical Evidence Of Disability

The medical evidence needed to establish the nature and severity of the applicant's disability, the date it began, and its prognosis comes from the doctor who has treated the worker and knows his case, or the hospital or institution in which the worker has been confined. A Medical Report form was designed to assist the physician in furnishing the needed medical evidence and to indicate the nature and extent of clinical detail which would be necessary. It is given to the applicant for the "disability freeze" and he is asked to have it filled out by the physician most familiar with his impairment. The form itself is modeled closely after the medical report used by major life insurance companies in their disability claims work. In adapting it for use in the "freeze" program, the recommendations of a Medical Advisory Committee were closely followed. This Committee, composed of well qualified representatives of the medical and related non-medical professions, gives advice and guidance to the Social Security Administration on the medical aspects of the "disability freeze" program.

If you have received this medical form to fill out for any of your patients, you are probably aware that the law makes the disabled worker responsible for seeing that medical evidence is submitted for him and for paying any costs involved. The law does not permit the Government to pay any costs in connection with securing the medical evidence needed for a determination of disability. You may also know that to insure the confidentiality of the medical evidence, the medical report form is not to be returned to the patient, but is to be mailed by the physician direct to the local social security office. This office, incidentally, is ready to furnish additional information to the physician concerning the medical report form and the operation of the disability freeze.

Determining Disability

Determinations as to disability based on the evidence submitted are made under an agreement with the Federal Government, by professional members of an agency of the State in which the applicant resides. In most States, this is the vocational rehabilitation agency. Since referral of disabled individuals for any rehabilitative services which might return them to gainful work is an important aspect of the program, each person applying for the social security disability freeze is told about the availability of vocational rehabilitation services.

On the professional team in the State agency at least one member is a doctor of medicine. The team reviews and evaluates all medical evidence assembled in the applicant's file, as well as such non-medical factors as age, education and occupational experience. Certain medical guides and standards, worked out with the advice of the Medical Advisory Committee are used in the consideration of the medical evidence. But, although these guides and standards can be applied in most cases, they are not rigid and arbitrary. The final determination in each case is based on all the available facts of the individual's impairment and vocational history, and, there is consultation among physicians in any borderline situation.

Guides to Filling Out the Medical Report Form

No matter how good the standards, nor how considered the judgment of the reviewing team, the determination reached can be no sounder than the evidence upon which it is based. To make sure that he is providing sufficient medical evidence for a prompt and fair determina-

Upjohn

Rheumatoid arthritis, rheumatic fever, intractable asthma, allergies . . .

Cortef^{*}

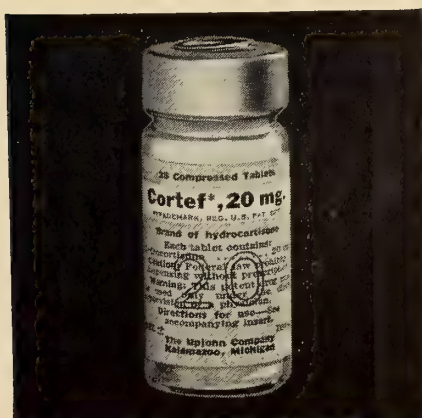
tablets

Supplied:

5 mg. tablets in bottles of 50
10 mg. tablets in bottles of 25, 100, 500
20 mg. tablets in bottles of 25, 100, 500

*REGISTERED TRADEMARK FOR THE UPJOHN
BRAND OF HYDROCORTISONE (COMPOUND F)

The Upjohn Company, Kalamazoo, Michigan



tion, the doctor will want to consider the following guides in filling out medical report forms for those of his patients who have applied for the social security disability freeze:

First, include sufficient clinical detail to enable the reviewing team to make a sound determination as to the severity and extent of the patient's current condition;

Second, give enough of the clinical history to provide information as to when the disability began, and when it became so severe as to keep the patient from working;

Third, describe the probable course of the condition from now on, so that a decision can be reached as to whether the impairment is likely to continue indefinitely, or end in death, or whether it is self-limiting, or remediable in the foreseeable future.

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strike back

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CANCER SOCIETY** 

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AND
BUILDINGS
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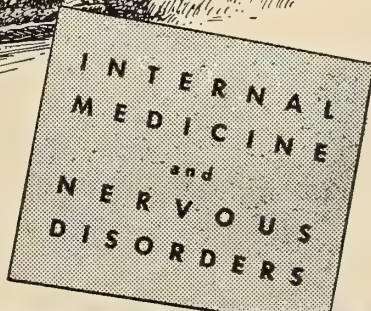
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Medical Director, Charles W. Thompson, M.D., F.A.C.P.

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PASADENA, CALIFORNIA

BOARD OF MEDICAL EXAMINERS—STATE OF ARIZONA

826 Security Building

Phoenix, Arizona

The Board of Medical Examiners of the State of Arizona at a regular meeting held July 21, 1956, issued certificates to practice medicine and surgery to the following doctors of medicine:

| | |
|--|---|
| Alden, Neil Charles 1513 W. Thomas Rd., Phoenix, Arizona | Jensen, Thomas Walter 4013 North 6th Street, Phoenix, Arizona |
| Bassford, Paul Stanley, Jr. Maricopa County Hospital, Phoenix, Arizona | Kahle, John Frank 505 North Beaver, Flagstaff, Arizona |
| Batts, Edward Lee, II 4139 N. 18th Drive, Phoenix, Arizona | Kimball, Howard Widtsoe 1602 West Roma, Phoenix, Arizona |
| Bill, Edward Charles 131 E. Barrymore, Stockton, California | Kudelko, Nicholas Michael Box 66, Babbitt, Nevada |
| Billings, Carl Emery, Jr. 2850 Santa Ynez Place, Tucson, Arizona | Lahr, Philip Heinrich Maricopa County Hospital, Phoenix, Arizona |
| Brewer, Edward Allan 499 Pacific St., Monterey, California | Lawler, Philip Wendell 2500 East Van Buren, Phoenix, Arizona |
| Bromme, Dorothy Ann 532 N. Scottsdale Rd., Scottsdale, Arizona | Leih, George Gustav Theodore 2125 West Hazelwood, Phoenix, Arizona |
| Carstensen, Harold George 116 N. Tucson Boulevard, Tucson, Arizona | McCormick, Thomas Everett 321 West Central, Coolidge, Arizona |
| Class, Robert Nelson 57 N. Pennsylvania, Belleville, Illinois | McCarey, Gladys L. Taylor 4320 East Thomas Road, Phoenix, Arizona |
| Dean, Robert Theodore, Jr. 6007 North 16th Street, Phoenix, Arizona | McMoran, Charles William 152 West Merrell Street, Phoenix, Arizona |
| Doyle, Peter James 2500 East Van Buren, Phoenix, Arizona | Malone, Raymond Charles 29 B Street, Roswell, New Mexico |
| Eskelson, David Wright 240 La Mina Avenue, Ajo, Arizona | Munger, Arbor Day 1016 Sharp Bldg., Lincoln, Nebraska |
| Evans, Robert Charles St. Joseph's Hospital, Phoenix, Arizona | Roberts, Loy Galatha 403 E. Glendale Avenue, Glendale, Arizona |
| Fredell, Clarence Herbert 121 Aspen, Flagstaff, Arizona | Rydell, William Birger 40 W. Newton Street, Rice Lake, Wisconsin |
| Fulstow, Philip G. P. O. Box 366, Kanab, Utah | Sandt, Karl Eugene 1750 Medical Arts Bldg., Minneapolis 2, Minn. |
| Garcia, William 41 West Jackson, Tucson, Arizona | Spiritos, Michael Nicholas 615 Hillview Street, Winslow, Arizona |
| Gillette, John Murray 2440 E. 6th Street, Tucson, Arizona | Stannard, Dale Hampton 608 Professional Building, Phoenix, Arizona |
| Haeussler, William Bernard 3009 N. 19th Ave. — Apt. 124, Phoenix, Ariz. | Stearns, Elliott Edmund, Jr. 2737 E. 21st Street, Tucson, Arizona |
| Hazelhurst, George Nicholls 3818 E. Heatherbrae, Phoenix, Arizona | Taylor, Preston Johnson 1617 Wilson Ave., Salt Lake City, Utah |
| Helms, William Kendall 2104 Westward Boulevard, Phoenix, Arizona | Walstad, Paul Marion Route 4, Box 464, Turlock, California |
| Hodell, Frederick Howard Maricopa County Hospital, Phoenix, Arizona | Wrzesinski, John Thomas 800 North 1st Avenue, Phoenix, Arizona |
| Hill, Richard Johnson 78 North 3rd Street, Buckeye, Arizona | |

ARIZONA BLUE SHIELD
TO ALL ARIZONA PHYSICIANS

TIME is drawing near for you to elect delegates to represent you at the Arizona State Medical Association meeting next spring. These delegates also constitute your official voice in running Blue Shield, since these same delegates along with the Professional Committee and Board of Directors serve as the Corporate Body of Blue Shield . . . and set its broad policies. Therefore voting for your state medical delegates is obviously of double importance to you.

Please note, however, that the House of Delegates is not your only means of operating Blue Shield. You have an elected all-Physician Professional Committee representing all fields of practice and all parts of the state. These men *work* long and hard for you and entirely handle the medical affairs of Blue Shield such as fee schedules and adjudication matters. They are paid only in the satisfaction that they are doing a service for the people of Arizona and you as well. Please advise them of your wishes. Also you are free to write or contact personally any or all of the predominantly-physician Board of Blue Shield, its officers, or the recently appointed Joint Commission for the study of the Arizona plan (Chairman, Dr. Hilary Ketcherside, Phoenix). An able and dedicated administrative staff stands ready to carry your wishes into actuality. Being informed is important. Your desires or requests for information are as close to you as pen, ink, and paper, or the telephone.

But to get back to the delegates. Please consider how important this delegate is to you. We have almost always had a good House of Delegates, so let's keep it that way or go a step further and have even better representation. A good delegate doesn't need to be the winner of a personality contest. He may be, but not necessarily, the fellow who tells the best stories in the hospital locker rooms. He may be a specialist or a general practice man, both have minds with which to think. He is often an older man experienced in running the affairs of the local County Society; but he need not be. Young men with new ideas are desirable to temper the conservatism of the old guard. The man you select should be:

- Interested
- Fair-minded

Able to think clearly
Able to stand on his two feet and deliver his thoughts,
Sincere, dedicated
An improver, not a wrecker;
and above all he must be there to tell your story and to run things right. To quite this election year's most potent slogan — "Vote for the right man."

**WHAT IS HAPPENING AROUND
BLUE SHIELD THIS MONTH?**

1. The new building being constructed on Indian School Road near 3rd Avenue in Phoenix is well on the way. We have branch offices in Tucson and Flagstaff now.
2. As an outgrowth of deliberations of the Joint Commission, it is likely that a research organization such as Stanford Research Institute will be employed to make a study of the future scope and intent of Blue Shield.
3. Four different physician groups have prepared, checked and double checked and completed a list of procedures whereby assistant surgeons will be paid a fee, but not at the expense of the surgeon's fee.
4. The Professional Committee, after long, careful deliberations, has just completed an entirely new fee schedule which, for the most part, provides many increases and eliminates previous inequities.
5. The work of other committees to broaden Blue Shield coverage is well along the way to completion. If the laggards involve you, get after them. A prod is far more productive than a gripe.
6. New contracts embodying the above changes and to meet previous objections are being drafted by the staff and legal counsel and should be ready to replace the old contracts some time after the first of the year.

It takes time but progress is being made . . . as rapidly as possible. Other things are in the offing, things that we are sure you will approve. So "buttonhole" your delegate, write us letters, come in personally; understand Blue Shield, and make it just as you want it.

G. Robert Barfoot, M.D.
Pres. Ariz. Blue Shield

THE PHYSICIANS FORUM
The following paragraphs are reprinted from the Secretary's Letter of the American Medical

Association. They deserve your consideration.

"The Physicians Forum, which was once spearheaded by a committee headed by the late Ernst P. Boas of New York, is passing the hat again among doctors for funds to finance a campaign to get social security for doctors. The Forum recently mailed a four-page brochure to every doctor in the United States, practically the same kind of brochure that it mailed back in 1952.

"The response from doctors will probably be no better this time than it was in 1952. Too many honest and sincere physicians recall the activities of The Physicians Forum a few years back.

"The Forum, which labeled itself the "voice of the liberal doctor," once championed the

fight in behalf of the Wagner-Murray-Dingell bill providing for compulsory national health insurance. Many physicians also remember how, in November, 1945, The Physicians Forum issued a statement saying that it 'strongly approves the message of President Harry S. Truman calling for the establishment of a nationwide health and medical care program to supply the medical needs of all Americans regardless of income, race and religion.'

"Within the recent weeks, the A.M.A. Journal published a series of two excellent articles dealing with the subject of social security for physicians. The articles strongly refute the statements and arguments presented in The Physicians Forum brochure, showing beyond question that they are false and misleading."

THE ARIZONA MEDICAL ASSOCIATION, INC.

826 Security Building
Phoenix, Arizona

Location Opportunities

AJO — Pop. 7500 — General-industrial practice. Has need of general practitioner with special interest in internal medicine, to complete four man staff, with 47 bed modern well-equipped industrial hospital. Salary and income guarantee. Write Dr. F. A. Nelson, Chief Surgeon, for particulars.

ASHFORK — Pop. 700 — Railroad center — Contact Mr. J. J. Slamon, Justice of Peace, Ashfork, Arizona.

DOUGLAS — Pop. 10,000 — Opportunity for associate practice in OALR. Contact James S. Walsh, M.D., 631 9th Street, Douglas, Arizona.

FLAGSTAFF — Pop. 7500 — Navajo Ordnance Depot is in the process of recruiting for a medical officer GS-12, \$7040 per annum. For further information write M. R. Bell, Personnel Officer, Navajo Ordnance Depot, Flagstaff, Arizona.

FLAGSTAFF — Excellent opportunity for a pediatrician and for a radiologist. Please contact Morris M. Zack, M.D., 411 Birch Street, Flagstaff, for further information.

GILA BEND — Pop. 2500 — Good opportunity for general practitioner. Cattle, cotton, and general farming. Office and equipment available. \$150 monthly income from Board of Supervisors. Contact Mrs. J. F. Allison, Box 126, Gila Bend, Arizona.

KINGMAN — Pop. 3342 — Excellent opportunity for a General Practitioner-Surgeon to take over the active practice of a doctor leaving there. Equipment available at nominal fee. If interested, contact Doctor Walter Brazie, Masonic Building, Kingman.

SAN MANUEL — Physician to be associated with the copper mining company located there. Contact Francis M. Findlay, M.D., San Manuel Hospital, San Manuel.

TUCSON — An opening in the Outpatient Department of the Veterans Administration Hospital in Tucson for a generalist or internist will occur early in September. State License is necessary, but not necessarily an Arizona license. If interested contact S. Metzger, M.D., Director, Professional Service, V.A. Hospital, Tucson, Arizona.

TUCSON — Opening for a Board certified or Board eligible Orthopedist to form and head an Orthopedic Department in the Tucson Clinic. If interested, contact D. J. Heim, M.D., The Tucson Clinic, 116 North Tucson Blvd., Tucson, Arizona.

TUCSON — Looking for a General Practitioner for plant services — \$750.00 monthly, 5 days a week. Contact Doctor Meade Clyne, 116 North Tucson Boulevard, Tucson, Arizona.

WILLCOX — Pop. 900 — Doctor C. J. Bozzi, 124 West Maley Street, Willcox, Arizona, is interested in disposing of practice. He is expecting only reasonable payment for equipment. Records go with such sale.

WILLCOX — In need of a medical doctor badly. Contact Mrs. John C. Wilson, Box 548, Willcox, Arizona.

YOUNGTOWN — Pop. 130 — Located 16 miles from Phoenix, 4 miles from Peoria, 1½ miles from El Mirage, 1 mile from Surprise, each a potential field of practice. It is within an agricultural area. Most residents are 60 years of age or older, and are in need of medical care. Currently provided at no rental is office space. A medical center facility is being planned. Interested medical doctors may contact Mr. Sid Lambert, Box 61, Marionette, Arizona.

YUMA — Pop. 15,000 (approximately) — In need of a county physician. This is an ideal set-up for a retired or semi-retired doctor. The doctor could devote all his time to the job or have a private practice in addition. If interested, call Mr. Robert Odom collect at SUNset 3-7843 as soon as possible.

For Information On Opportunities In the Field Of

Industrial Medicine, Contact:
F. R. Nelson, M.D., Phelps Dodge Hospital, Ajo, Arizona
Carl H. Gans, M.D., Phelps Dodge Hospital, Mor-
enci, Arizona
Ira E. Harris, M.D., Miami-Inspiration Hospital,
Miami, Arizona
Charles B. Huestis, M.D., Box 928, Hayden, Arizona

Elvie B. Jolley, M.D., Copper Queen Hospital, Bis-
bee, Arizona
H. W. Finke, M.D., Magma Copper Company Hos-
pital, Superior, Arizona
Francis M. Findlay, M.D., San Manuel Hospital,
San Manuel, Arizona
John Edmonds, M.D., Kennecott Copper Corpora-
tion Hospital, Ray, Arizona

County - State - National Medical Society Meeting Calendar

APACHE — 2nd Tuesday Monthly (3-Way Tele-
phone Communication) Special Meetings at Mc-
Nary.
COCHISE — 3rd Wednesday Monthly (Alternating
Between Bisbee-Douglas Commencing September)
COCONINO — 2nd Tuesday of March, June, Sep-
tember and December (8 P.M. Flagstaff Hospital)
GILA — 3rd Thursday Monthly (excepting Sum-
mer Months) at 7:00 P.M.
GRAHAM — 1st Monday Monthly at 8:00 P.M. —
Special Meetings Subject to Call.
GREENLEE — 3rd Tuesday Monthly Evenings —
Special Meetings Subject to Call.
MARICOPA — 1st Monday Monthly Evenings
(September through June) Good Samaritan Hos-
pital Auditorium.
MOHAVE — Subject to Call.
NAVAJO — Monthly Subject to Call at Winslow
Memorial Hospital or Nancy Wright Clinic.
PIMA — 2nd Tuesday Monthly Evenings (October
through May) El Conquistador (excepting Decem-
ber at Davis-Monthan AFB and May at VA Hos-
pital).
PINAL — 2nd Tuesday Monthly (September
through June) at Pinal General Hospital, Florence.
SANTA CRUZ — 3rd Thursday Monthly Evenings
(September through May).
YAVAPAI — 1st Tuesday Monthly Evenings (Sep-
tember through May).
YUMA — 1st Tuesday Monthly Evenings (Sep-
tember through June).
ARIZONA MEDICAL ASSOCIATION — 66th An-
nual Meeting — Stardust Hotel, Yuma — April
10 through 13, 1957.
AMERICAN MEDICAL ASSOCIATION — Clinical
Meeting — Seattle, Washington — November 27
through 30, 1956.
Annual Meeting — New York, N. Y. June 3
through 7, 1957.

HILL-BURTON GRANTS
The Department of Health, Education and Wel-
fare reports as of July 31, 1956, the status of all
Hill-Burton grants for the State of Arizona. Ap-
proved, but not yet under construction are fifteen
(15) projects at a total cost of \$12,050,437, including
federal contribution of \$3,650,050, designed to sup-
ply 884 additional beds. Eight (8) projects are un-
der construction representing a total cost of \$2,-
844,201 (federal contribution of \$1,003,085 includ-
ed), designed to supply 30 additional beds.
Marking the 10th anniversary of enactment of
the Hill-Burton Act, officials of the Department of
Health, Education, and Welfare estimate that dur-
ing that period a total of 3,047 projects have been
approved. Their cost is placed at \$2,467,333,207,
with the federal share at \$781,421,267. Breaking
this total down, hospital projects under the regu-
lar Hill-Burton program amount to 2,843 at a cost
of \$2,342,545,709; the federal share was \$752,938,-
357 or roughly one-third of the total. Medical
facilities authorized under the 1954 amendments
accounted for 204 units at a cost of \$124,787,498;
the federal share this time was \$28,482,910 or
about one-fifth of their cost. Medical units are
divided: 42 chronic disease hospitals, 42 nursing
homes, 77 diagnostic centers and 43 rehabilitation
centers.
Looking ahead, the agency insists the "bed de-
ficit of the nation is still great" and that estimates
by states reflected in state plans indicated about
843,000 more hospital beds are still needed.

U.S.P.H.S. — Arizona Contract Care Payments
Below is tabulated a summary of government
funds expended by the U. S. Public Health Ser-
vice to physicians, hospitals and other vendors in
Arizona during the fiscal year 1956. "Other Ven-
dors" include laboratory services, orthopaedic ap-
pliances, eye glasses, etc.

| County | Physicians and Surgeons | | Hospitals and Insititutions | | Other Vendors | |
|-----------------|-------------------------|-------------|-----------------------------|--------------|---------------|-------------|
| | No. | Amount | No. | Amount | No. | Amount |
| Arizona - Total | 85 | \$33,342.23 | 19 | \$116,127.33 | 40 | \$10,624.47 |
| Apache | — | — | 2 | 345.00 | — | — |
| Coconino | — | — | 1 | 4,979.30 | 1 | 24.40 |
| Gila | 5 | 936.18 | 1 | 386.25 | 1 | 48.75 |
| Graham | 3 | 700.00 | 1 | 1,106.15 | — | — |
| Maricopa | 35 | 7,872.35 | 7 | 86,362.79 | 21 | 4,704.87 |
| Mohave | 2 | 6,229.50 | 1 | 6,128.25 | 2 | 507.00 |
| Pima | 26 | 10,272.70 | 4 | 7,686.75 | 6 | 1,857.50 |
| Yavapai | 6 | 4,041.00 | 1 | 6,267.84 | 2 | 233.00 |
| Yuma | 7 | 3,290.50 | 1 | 2,865.00 | 7 | 3,248.95 |

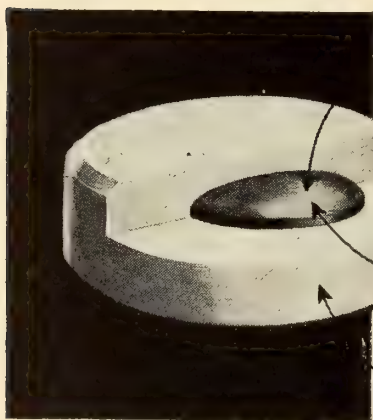
NEW

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combine:

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PROPERLY FORMULATED



PREDNISOLONE (1

+

ASPIRIN (0.3 Gm.)

+

ASCORBIC ACID (5

+

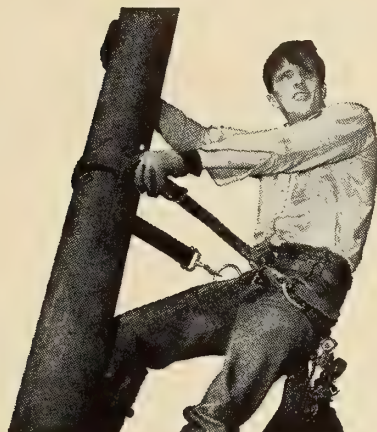
ANTACID (0.2 Gm.)

• Physical separation of the steroid component from the aluminum hydroxide as provided by the Multiple Compressed Tablet construction assures full potency and stability of prednisolone.

*Early rheumatoid arthritis
Rheumatoid spondylitis
Osteoarthritis
Still's disease
Psoriatic arthritis
Bursitis

Synovitis
Tenosynovitis
Myositis
Fibrositis
Neuritis

Performance
Activities
Patients



Multiple Compressed **T**ablets

TEMPOGEN®

... for anti-inflammatory, anti-rheumatic benefits
at effective low dosage.

... for analgesia plus additional anti-rheumatic
activity.

... for anti-stress support that guards against ad-
renal ascorbic acid depletion.

(Ascorbic Acid present as 60 mg. Sodium Ascorbate.)

... dried aluminum hydroxide gel minimizes the
possibility of gastric distress.

DOSAGE: 1-4 TEMPOGEN Tablets t.i.d. or q.i.d.
(TEMPOGEN Forte, 1 or 2 tablets t.i.d. or q.i.d.)
for one or two weeks. Then lower by 1 tablet every four
or five days to maintenance level.

SUPPLIED: TEMPOGEN and TEMPOGEN Forte
—in bottles of 100 Multiple Compressed Tablets.
(TEMPOGEN Forte provides 2 mg. of prednisolone.)



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Arizona's Most Complete Service Institution
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HOBBY HORSE RANCH SCHOOL

A School For Exceptional Children

The Hobby Horse Ranch School is both home and school for a small group of children. It welcomes the child who is mentally retarded and physically handicapped as well as the backward child who suffers no physical handicap.

The Hobby Horse Ranch School is a branch of Fairview School in Fishkill, New York which was established in 1936.

Directors: Blanche C. Lightowler, B.A.
Matthew W. Lightowler

P.O.B. 44, Cortaro, Ariz.



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McCrory's
DRUG CO.
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ALL TYPES AND MAKES OF MEDICAL & SCIENTIFIC APPARATUS REPAIRED
Majority of all repair parts in stock and immediately available.

The Arizona Medical Equipment & Service Co.

1005-B N. 7th St., Phoenix

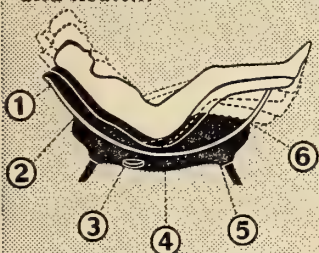
AL 3-9155 or CR 4-4171

IF YOU HAVE ONLY ONE HEART...

ORIGINAL

*Contour*LOUNGE
CHAIRS

Easily adjusted to any of
7 "Cradle-Comfort" po-
sitions for your comfort
and health.



each offering Contour
Control to 6 Vital Zones

- ① head and neck supported in Contour comfort
- ② chest and diaphragm positioned to aid breathing
- ③ small of back supported by Contour's design
- ④ sacrum "tail-bone" pressure lessened, for comfort
- ⑤ leg muscles supported without pressure... aiding rest
- ⑥ feet elevated helps normalize circulation



Patented

Today's stepped-up pace of living often places undue strain on heart and nerves. Relaxation can ease the heart load, reduce fatigue, and bring rest to tired, aching muscles. You'll feel completely rested in a Contour Lounge Chair for you rest with your head and feet elevated... body completely supported with no "pressure points." Now you can read... relax... watch TV in an original Contour Lounge Chair and

Take the Load Off Your Heart Without Going to Bed

- ☐ Please send FREE LITERATURE on the Original Contour Lounge Chairs.
- ☐ Arrange to deliver a Lounge Chair to my home for demonstration and FREE TRIAL.

Name _____

Address _____

City _____ State _____

WRITE FOR FREE LITERATURE

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Town & Country Village

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Phone CR 7-2788 — Phoenix, Arizona



Woman's AUXILIARY

CIVIL DEFENSE — WHAT TO DO IN CASE OF AN ENEMY ATTACK

IF YOU LIVE BEYOND THE SAFETY LINE

REMEMBER, no one can be sure just where an enemy bomber may strike. If your home is near the Safety Line on the map, it is better to move still farther out in an evacuation. A good storm cellar 20 miles outside the city will give you and your family protection. If in doubt, **MOVE OUT** when advised to do so.

MAKE A PLAN

Your plan will help you most in such an emergency. You should have worked it out with your family so that each one knows what to do, where to go, and what to take along. A civil defense survival kit would be a good thing to have ready. Make sure that your plan conforms to the community plan. Try it out some day to see if you have forgotten anything important.

WHAT TO DO

When evacuation is advised, close your home as you would if you were going to be away for several days. Take the things you have assembled for such an emergency to your car and drive on the nearest evacuation route. Do not speed, drive carefully, and when you have entered the evacuation route, drive along at the same speed as other traffic. **REMEMBER**, it will do no good to try to get ahead.

EVERY CAR MUST BE FULL

If you can't find a ride start walking along an escape route. Organized public transportation may be able to pick you up, or you may be able to obtain a ride with others. Drivers pick up passengers to capacity. Drivers of unassigned trucks and busses swing by nearest school or hospital and load to capacity. Get as far away as possible, beyond the 15 mile line for sure. Then find the best shelter.

TRAFFIC RULES . . . MOVE OUT . . . NEVER ACROSS

When the "YELLOW ALERT" signal sounds and you decide to evacuate, all escapeways will be one way — outbound only. Do not try to cross any of these escapeways or police will stop you. For another reason, traffic going

outbound would be so heavy you couldn't cross if you tried.

Head in one direction only — outbound, the way traffic is moving. Disregard any fixed signals that would prevent you going outward.

Keep your car radio on 640 or 1240 at all times. This is your only communication.

Keep ½ tank of gas at all times

Have in the car the following:

1. DRINKING WATER
2. FOOD
3. FIRST AID SUPPLIES
- BLANKETS, READING MATERIAL
- DESERT SURVIVAL PAMPHLET
- EVACUATION MAP
- RADIO

SECURE EVACUATION MAPS AND OTHER INFORMATION AT FIRE STATIONS, BANKS, FRATERNAL AND VETERANS ORGANIZATIONS AND ANY C. D. HEAD-QUARTERS

ONCE OVER QUICKLY

1. The Yellow ALERT SIGNAL means you should tune your radio to either 640 or 1240 on the dial to receive Civil Defense Instruction. You should also start moving out of town. The YELLOW ALERT SIGNAL will be announced by a 5-minute steady sound on the air raid warning sirens, and also by the radio (640 or 1240 on your radio dial).

2. Package now the essential items you wish to take with you.

3. Ride out if you can. Walk out if you have to.

4. Prearrange evacuation transportation for your family (at home, at work, at school, etc.).

5. Study the map and familiarize yourself and your family under various conditions, (at work, at home, etc.) keeping in mind the district in which each person might be at the time. Select your family's rendezvous.

6. Get on escapeways promptly — but calmly. Pick up passengers to capacity.

7. Follow traffic — one way only, outbound!

- 8. Don't try to cross escapeways.
- 9. Don't use the telephone.
- 10. Take cover on **WARNING RED SIGNAL** (a three-minute wailing sound that rises and falls in intensity).
- 11. The **ALL-CLEAR SIGNAL** is no longer in use because of possible lingering radiation in some areas. You will be notified by radio or by **CIVIL DEFENSE BLOCK WARDENS** when it is safe to come out of your shelter or return to city.

YOU WILL WANT TO KNOW ABOUT AIR RAID WARNING SIGNALS

All citizens should familiarize themselves with the two types of warning signals which will be sounded by **CIVIL DEFENSE OFFICIALS** in times of emergency. They are: The Alert — a steady blast of 5 minutes duration. The alert signal will indicate to the public to act according to the operations plan of the local **CIVIL DEFENSE OFFICE**.

- 1. **YELLOW** — 5 minutes — evacuate city
- 2. **RED** — 3 minutes — take cover

YOU WILL WANT TO KNOW ABOUT CONELRAD

Where will you get immediate and official information from **CIVIL DEFENSE** authorities in times of emergency?

You will get this vital information **BY TURNING THE DIAL OF YOUR RADIO TO 640 or 1240 ON THE DIAL**. Remember these numbers, they may save your life.

Because of the H-bomb, best measures for safety consist of getting out. The farther out you are the better your chances of survival.

(Editor's Note — The above recommendations are sound. They are of particular significance to the people of Phoenix and Tucson. But — Tucson and Pima County are laggard. The people of the Tucson area have no chance to evacuate, they have no alarm system. Evacuation is a must, it is feasible. But — they have not budgeted \$0.07 per person to give themselves this chance!)

ARIZONA CIVIL AIR PATROL

- 1. Physicians are needed in the Arizona Civil Air Patrol as Medical Officers.
- 2. CAP, as Auxiliary to the USAF, has the following missions:
 - A. The Training of Air Cadets; Summer Encampment; Foreign Exchange.

- B. The Performance of Disaster Rescues.
- C. Cooperation with Civil Defense.

3. CAP is a Volunteer Organization whose members serve without pay. Reserve Officers are entitled to their Reserve Rank; others are given appropriate rank.

4. CAP began in 1941 in response to the need to help patrol our coastlines to spot enemy submarines.

5. CAP organization is based on a Natl. HQ at Bolling Field, Washington, D. C.; with Wing HQ in each State and Territory; and with Groups and Squadrons within each State.

6. There are several Groups and Squadrons in Arizona, as; — Phoenix, Tucson, Prescott, Casa Grande, Yuma, Wilcox, Eloy, Kingman, Ft. Defiance, Window Rock, Winslow, Kayenta, Bagdad, Bullhead City, Morenci, Florence, Mesa, Holbrook, Payson, and Buckeye.

7. Qualifications for CAP Medical Officers; CAPR 160-1 dated 31 Jan. 1955. National HQ CAP AUX of USAF Bolling Air Force Base Washington, D. C.

8. Any physician who is interested in joining CAP may apply to his nearest CAP Unit Co. J. H. Stickler, M.D., Lt. Col, Wing Medical Officer, Tucson Municipal Airport.



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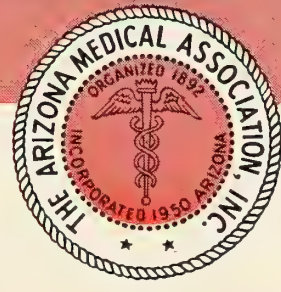
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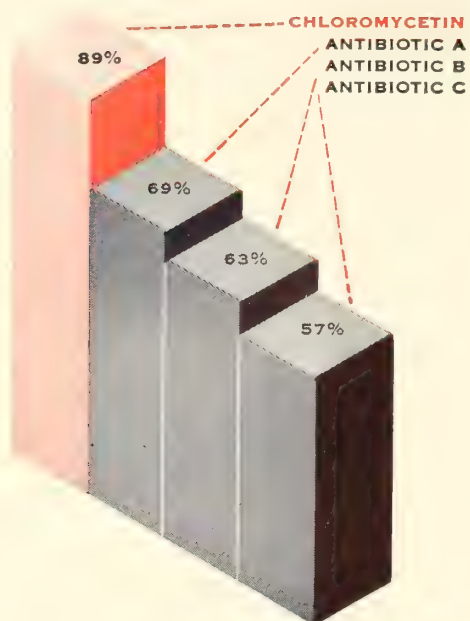
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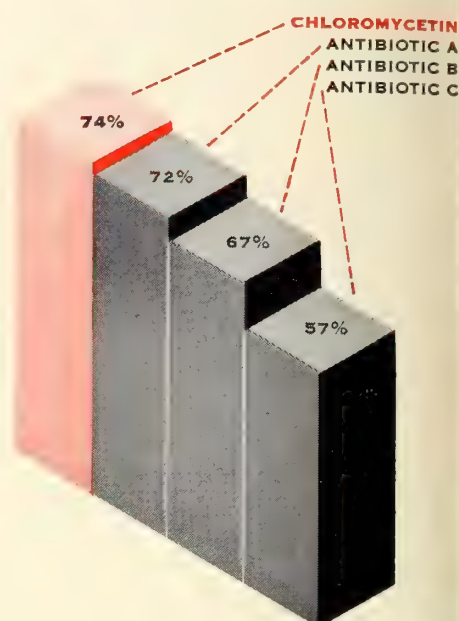
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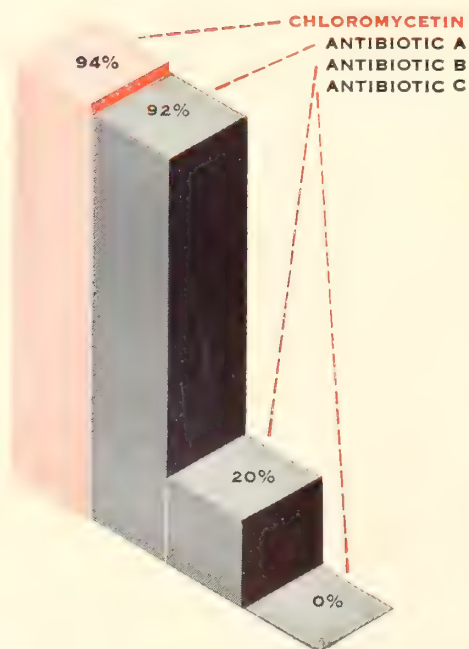
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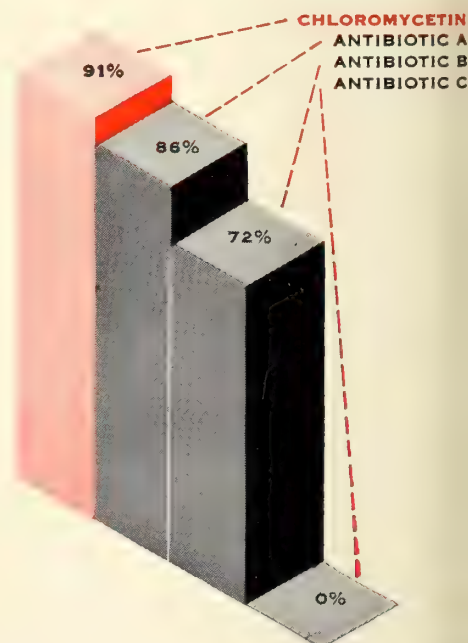
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ARIZONA MEDICINE

Journal of ARIZONA MEDICAL ASSOCIATION

VOL. 13, NO. 12



DECEMBER, 1956

TABLE OF CONTENTS

| | |
|----------------------------|-----|
| OFFICERS DIRECTORY | 6A |
| SPECIAL COMMITTEES | 7A |
| INDEX TO ADVERTISERS | 49A |

ORIGINAL ARTICLES

| | |
|---|-----|
| CHRONIC COR PULMONALE — DIAGNOSIS AND TREATMENT | 519 |
| Drs. Morris Deitchman and E. H. Bregman, Phoenix, Arizona | |
| THERAPY OF LIP CARCINOMA | 525 |
| James M. Ovens, M.D., Phoenix, Arizona | |
| ASCITES | 528 |
| Mahlon Delp, M.D., Kansas City, Kansas | |
| THYROID THERAPY IN WOMEN | 531 |
| Joseph B. Raddin, M.D., Phoenix, Arizona | |
| CANCER RESEARCH | 535 |
| Darwin W. Neubauer, M.D., Tucson, Arizona | |

MEDICAL PROBLEMS

| | |
|---------------------------------------|-----|
| PHOENIX CLINICAL CLUB | 544 |
| Palmer Dysart, M.D., Phoenix, Arizona | |

PRESIDENT'S PAGE

| | |
|--|-----|
| MEDICARE PROGRAM IN ARIZONA | 552 |
| A. I. Podolsky, M.D., President, Arizona Medical Association | |

EDITORIALS

| | |
|---|-----|
| PHENOTHIAZINE | 533 |
| FEE SPLITTING | 544 |
| N. Y. MEDICAL SOCIETY VOTES AGAINST MANDATORY A.M.A. MEMBERSHIP | 554 |

LETTER TO THE EDITOR

| | |
|--|----------|
| AGAINST COMPULSION | 555 |
| BOOK REVIEWS — Epileptic Seizures | 541 |
| CARE OF MILITARY PERSONNEL AWOL | 551 |
| MEETING NOTICE | 551, 558 |
| 1957 ANNUAL MEETING | 555 |
| Raymond R. Lanier, M.D. | |
| THE HISTORY OF MEDICINE IN ARIZONA | 556 |
| John Charles Handy, M.D. | |
| PUBLIC ATTITUDE TO THE M.D. | 558 |

TOPICS OF CURRENT MEDICAL INTEREST

| | |
|---|-----|
| INSECTICIDE POISONING | 560 |
| P.L. 569 MEDICARE | 560 |
| EARLY MEDICAL MANAGEMENT OF MASS CASUALTIES IN NUCLEAR WARFARE | 561 |
| ORGANIZATION PAGE — Civics | 568 |
| ANALGESIC | 569 |
| UNIFORM CHEMICAL LABELING LAW PROPOSED | 574 |
| CIRRHOSIS | 574 |
| NEWS NOTICE | 574 |

WOMAN'S AUXILIARY

| | |
|--|-----|
| GILA COUNTY MEDICAL SOCIETY | 575 |
| Mrs. Wm. E. Bishop, President, Gila County | |

DIRECTORY

| | |
|----------------------------|-----|
| LABORATORIES | 41A |
| DRUGGISTS DIRECTORY | 43A |
| SANATORIUM DIRECTORY | 44A |
| PHYSICIANS DIRECTORY | 46A |

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ARIZONA MEDICINE

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Original ARTICLES

CHRONIC COR PULMONALE — DIAGNOSIS & TREATMENT

Morris Deitchman, M.D., F.A.C.P. and E. H. Bregman, M.D., D.A.B.R.
Phoenix, Arizona

THE COMMON pulmonary diseases which cause cor pulmonale are pulmonary tuberculosis and bronchiectasis. The less common causes may result from (1) tracheal or bronchial stenosis, (2) pulmonary collapse in infancy, (which is being recognized more frequently), (3) failure of the alveoli to develop, (4) mechanical factors resulting from chest deformities, (5) pulmonary arteriovenous communications either congenital or acquired, (6) intrathoracic conditions producing pressure on the main pulmonary arteries such as obstructions by syphilitic aortic aneurysm, mediastinal tumors, etc.

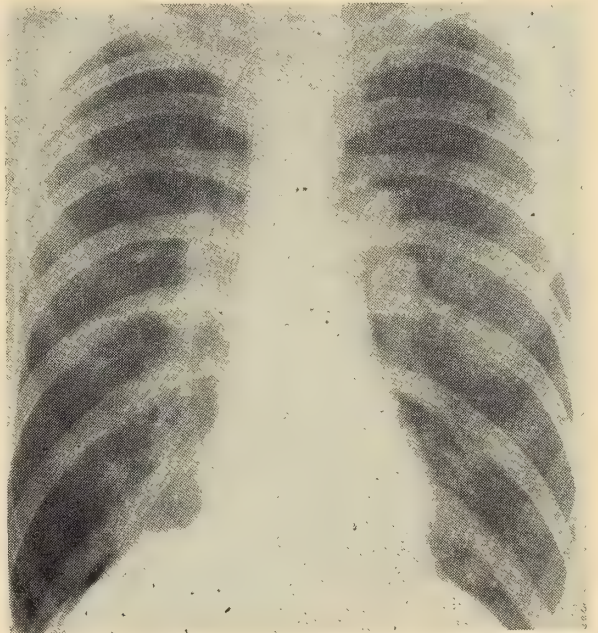
Historically primary endarteritis obliterans of the pulmonary arteries was described by Ayerza (2) in 1901 and Arrilage (3) in 1911 and called either cor pulmonale or "black cardiacs" because of the marked cyanosis attending this condition. At that time cor pulmonale or Ayerza's disease was considered unusual.

Earlier recognition of enlargement of the right heart in association with chronic pulmonary disease dates back about 150 years. Senac (4) described changes at autopsy in 1783, Louis (4) described similar changes in 1830, Budd (4) recognized enlargement of the right ventricle secondary to chronic pulmonary disease at autopsy in 1840, and Sibson (4) went into the details of these findings in 1848.

The authors became interested in cor pulmonale, in this area, because of the local concentration of chronic pulmonary disease. We had the opportunity to view about 3600 chest X-rays while employed respectively as chief

of cardiology and consultant in X-ray at the local Veterans Administration regional office. A large number of these patients were studied for the presence of chronic cor pulmonale. Oblique as well as P-A views of the chest were made, if enlargement of the pulmonary conus and pulmonary segment of the right ventricle were suspected.

Roessler (5), Dressler (6), Storch (7), Zadansky (8), and "The Criteria of the American Heart Association" (9) suggest that the early recogni-



4870—H. P., Age 34—(PA view). Severe asthma, emphysema, bronchiectasis. Allergies since childhood. The prominent pulmonary vessels are seen in the PA view. There are plain film changes suggesting bronchiectasis and emphysema. Note: The elongation and flattening of the upper segment of the left cardiac border in the vicinity of the main pulmonary artery.

tion of enlargement of the pulmonary segment is possible only in the right anterior oblique views. This silhouette is well illustrated with the heart models of the American Heart Association. The right heart enlargement of cor pulmonale can be shown even in early cor pulmonale only in the R.A.O. position.

Reviews of pathological material, two of which were made in Arizona, point out the failure to make early clinical diagnosis of cor pulmonale. Doctors Walzer and Frost (4) at VA Center, Whipple, Arizona, showed an 80% discrepancy between clinical and autopsy diagnosis. From November 1, 1953 to November 1, 1954, there was enlargement of the right ventricle in 36 of 103 autopsies at another VA hospital. These 36 patients with right ventricular enlargement did not die as the result of right heart enlargement, but at least five of these deaths were due to right heart failure. The 31 others with right heart enlargement had manifest right heart enlargement at autopsy, which was not recognized. "This condition — cor pulmonale or pulmonary heart disease — is an important one, though variable in incidence in different parts of the world. It has been considerably neglected and is probably more common than most statistical studies at present indicate, especially since it occurs so often in older people who are not frequently seen in general hospitals which treat acute conditions." (11).

The early recognition of right ventricular enlargement and its early treatment, including the treatment of the underlying pulmonary condition may defer more enlargement of the right ventricle. Proper management will prolong the lives of these patients.

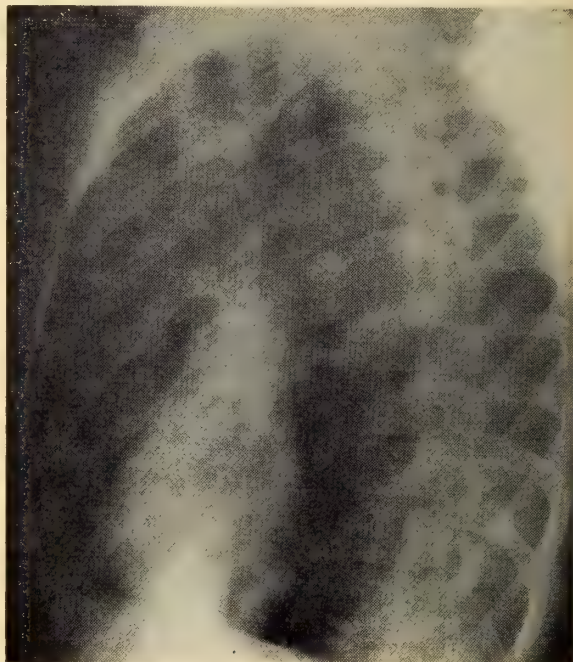
ROENTGENOLOGICAL DIAGNOSIS

The radiologist's problem in cor pulmonale is to demonstrate right ventricular hypertrophy and prominence of the main pulmonary vessels without concomitant enlargement of the left atrium or ventricle.

The right antero-oblique, and left antero-oblique film, in our experience, have been most rewarding. A 55 degree right antero-oblique is made according to the method of Traeger. This visualizes the pulmonary arc best. Another method is the use of fluoroscopy where the patient is rotated into the proper degree of obliquity to best show the bulging of the pulmonary

conus, pulmonary artery and the hypertrophy of the right ventricle which obscures the space normally present between the posterior aspect of the sternum and the anterior aspect of the right heart.

In early cor pulmonale, on the basis of the study of the above cases, we are able to



4870—H. P., Age 34—(Left anterior-oblique). This position indicates marked emphysema anterior and posterior to the heart with upward bulging of the left ventricle anteriorly.



4870—H. P., Age 34—(Right Anterior-oblique). The pronounced bulging of the pulmonary arc is well visualized.

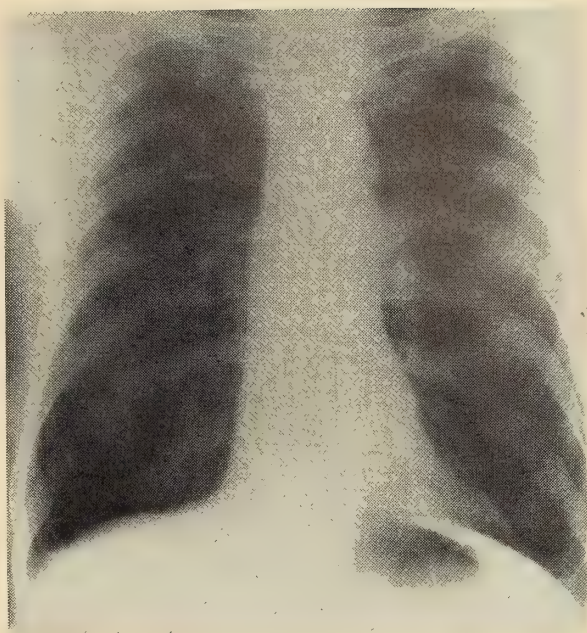
postulate enlargement of the main pulmonary vessels by the elongation and flattening of the upper left segment of the left cardiac border, and then positioning the patient in the right antero-oblique view. Suspicion is aroused with any chronic respiratory condition, such as asthma, emphysema, pulmonary fibrosis, tuberculosis, Collagen diseases, Boeck's sarcoid, carcinoma and bronchiectasis.

In mitral stenosis, in the PA view, a bulge is looked for near the main pulmonary artery, along the left cardiac border below the aortic knob, but in cor pulmonale a definite notch below this segment is present in contradistinction to the heart of mitral stenosis. The heart shadow is widened at the conus and each hilus is prominent due to enlarged pulmonary arteries. A seldom emphasized sign is the greatly increased oval density of the pulmonary trunk at the bifurcation. In the left antero-oblique position the enlarged right ventricle encroaches upon the retro-sternal space, since it is the chamber located anteriorly in this projection. The left ventricular groove which is displaced posteriorly and upward may be seen without difficulty at times, because of the low position of the diaphragms.

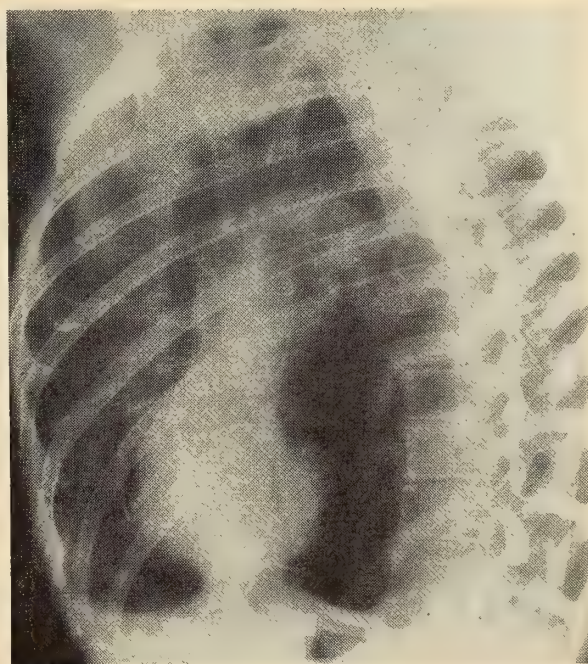
CLINICAL AND LABORATORY PROCEDURES

There are some clinical and laboratory studies which should supplement X-ray in the diagnosis of cor pulmonale. The development of more cyanosis and dyspnea in patients with chronic pulmonary disease should always lead to the suspicion of cardiac involvement. This is especially true if accompanied by tachycardia. Increased venous pressure, plus increased arm to lung circulation time confirm the impaired right heart circulation. After resection of a lung or a portion of a lung, or following thoracoplasty, the heart may be so displaced in its relationship to the lung and diaphragm that X-ray and electrocardiogram may be misleading. It is in such cases that venous pressure circulation time, and clinical acumen are important.

Catheterization studies showing chamber pressures and oxygen content of the catheterized blood in the various chambers of the heart would settle any of the controversies as to the presence or absence of cor pulmonale. Because this is still impractical in the physician's office or the average hospital, one has to resort to the ex-



12488—J. W., Age 46—(PA view). Bronchiectasis, emphysema. Allergies since childhood. There is evidence of emphysema, pulmonary fibrosis and possible bronchiectasis. The left hilus is elevated cephalad. Again note the elongation and flattening of the upper left segment, as evidence of impairment of the pulmonary circulation.



6485—E. W., Age 36—(Left anterior-oblique). Shows emphysema throughout with upward bulging of the right ventricle.

aminations which are easily available. Simple and informative procedures are circulation time studies, venous pressure studies, with hepatojugular reflex, and the hematocrit.

CIRCULATION TIME STUDIES

We like to combine sodium dihydrocholate and ether in one syringe. The lung to tongue as well as the arm to lung circulation can thus be done at one time. A mixture containing two minims of ether per cc. of saline, is combined with three cc's. of sodium dihydrocholate solution. The end points are sharp with ether and dihydrocholic acid and there should be little error. Repeated tests should be made to establish a base value. Subsequent changes in circulation time are very informative as to progressive right failure, left failure, or combined failure.

VENOUS PRESSURE

Burch (12) and others found elevated venous pressure in right ventricular insufficiency. The test is simple and definite if combined with the Pasteur-Rondot or hepatojugular reflex. Base values should be established for each patient. A rise of 2 centimeters on pressure over the liver suggests right ventricular hypertrophy and/or insufficiency.

THE ELECTROCARDIOGRAM

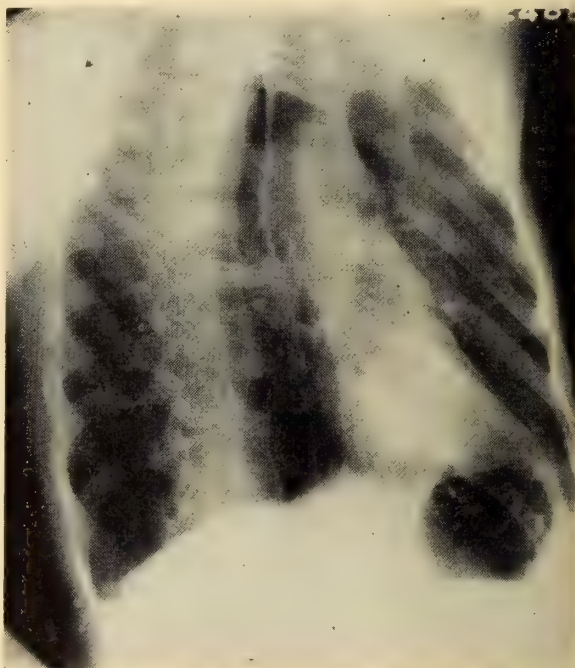
Electrocardiography in cor pulmonale and right ventricular hypertrophy has been much discussed. It is the impression of the authors that the electrocardiogram, like the X-ray is either valuable or valueless, depending upon the experience of the interpreter. The right chest leads are very important, but the standard limb leads, the unipolar limb leads, and the unipolar chest leads can be diagnostic. Large P waves in 2-3 and P-AFV are important. Prolonged intrisicoid deflections in V-1 or V-2 and/or Q-Vi or Q-V2, are confirmatory. The presence of "S" waves across the left chest are suspicious of right ventricular hypertrophy.

CLINICAL EXAMINATION

Careful clinical examination of the patient is still most important in the diagnosis of right ventricular hypertrophy. One should be suspicious of a shifting P. M. I. toward the xyphoid on inspiration and even more suspicious if P-2 is markedly accentuated and greater than the aortic second sound.



12488-J. W., Age 46—(Left anterior-oblique). Shows evidence of greatly increased oval density of the pulmonary trunk at its bifurcation, and no evidence of enlargement of the left ventricular inflow tract.



12488-J. W., Age 46—(Right anterior-oblique). Confirms the impression seen in viewing the PA view. N.B.: The bulging of the main pulmonary artery.

AUTOPSY MATERIAL

Larger group studies are becoming available showing the relative frequency of right ventricular hypertrophy. The findings in Arizona have been confirmed by Scott and Garvin (13) and many others. There is real need for a total population study in lung disease concentration areas, such as Arizona.

The case descriptions and X-rays of the cases given below are complete enough without more detail in the body of this paper. It is evident however, that (1) each of these patients has right ventricular hypertrophy, (2) this hypertrophy becomes visible in right oblique films.

TREATMENT

Many methods of treatment must be a part of the armamentarium of anyone undertaking the treatment of patients with chronic cor pulmonale.

(1) One must treat the underlying pulmonary disease with its complicating allergies, infections and emphysema.

(2) Polycythemia has to be watched for and treated with either periodic venesection or isotopes.

(3) Pulmonary edema requires special diets, use of diuretics, and salt restriction.

(4) Both carbonic anhydrase and cation resins are useful.

(5) When hypotension exists, increased pressure can be attained by the use of one of the ephedrine or dexedrine preparations, or by compression of the abdomen with a belt. We have found the Spencer-Barach-Gordon belt the most useful until now.

(6) Breathing exercises have been of little value in our experience.

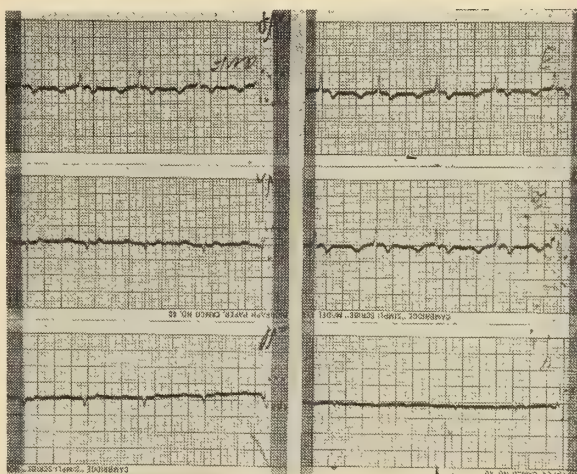
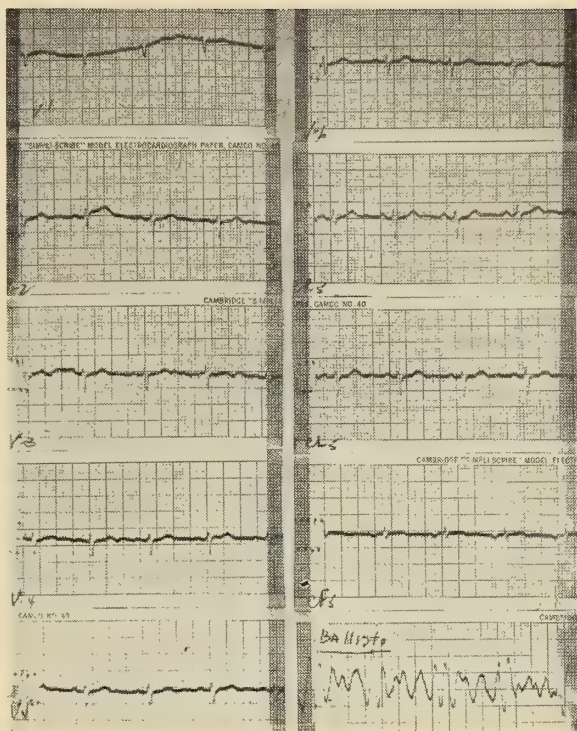
(7) Inhalation of alcohol vapor, with aminophyllin using oxygen as the carrying agent seems to be of real help in paroxysmal dyspnea.

(8) Digitalis is indicated if cardiac failure is suspected.

(9) It is important to withhold vaso-dilators because of the possibility of sudden death. This sudden death has been recently explained by Dorday (14) as due to compression of the left coronary artery at its origin between the aorta and pulmonary artery.

SUMMARY AND CONCLUSIONS

Cor pulmonale has become a major cause of disability in the Southwest area because of dense



This electrocardiogram was selected because it typifies the changes in advanced cor pulmonale as represented by low amplitude in Q(avf), peaking and enlargement of P2, P3, and P(avf) and presence of "S" waves over the entire chest with a delayed intrinsicoid deflection in V1, V2, and V3. The ballistocardiograph shows increased resistance in the secondary circulation which may or may not be diagnostic of pulmonary disease.



6485—E. W., Age 36—(Right anterior-oblique). Shows the marked prominence of the pulmonary arc, or conus.

concentration of respiratory cripples. The successful treatment of cor pulmonale is dependent upon its earlier recognition.

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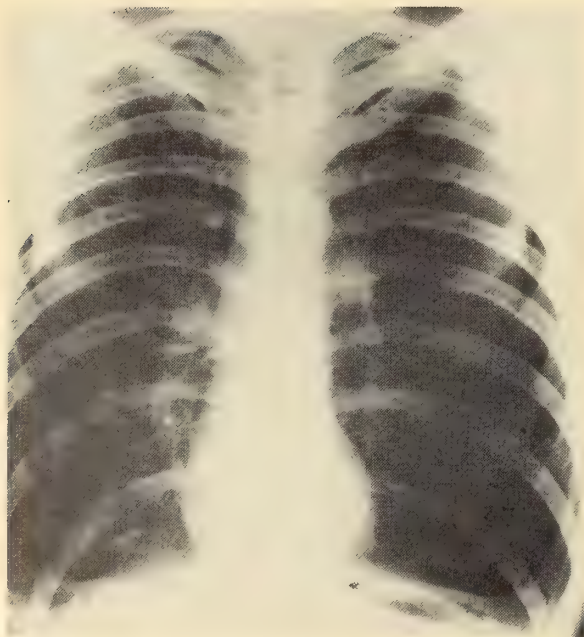
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6485—E. W., Age 36—(PA view). Chronic bronchial asthma, severe emphysema, many years duration. Marked emphysematous changes throughout both lung fields. Severe flattening and elongation of the upper left segment, of the left cardiac border.



THERAPY OF LIP CARCINOMA

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CARCINOMA of the lip represents one of the more common carcinomas seen today. It is the most frequent carcinoma associated with the oral cavity. In the treatment of this condition, one is concerned primarily with the defeat of the diseased process and the cure of the patient. Secondarily, but however assuming great importance, is the cosmetic result left after the destruction or the removal of the tumor.

To have an excellent cosmetic result while leaving residual tumor is disastrous. By so doing, we lose track of the primary purpose of the therapy, namely the curing of the lip cancer. One allows the secondary factor of cosmetic result to assume primary importance over the cure of the malignancy. This is one of the mortal sins of cancer therapy. Besides endangering the patient's life by diminishing his chances for cure, it eventually causes the patient to have a poorer cosmetic result than if adequate therapy was employed initially.

Lip cancer presents itself in many different forms and is not best treated by any routine method of treatment. To enjoy the best results one must have at his disposal several separate methods of treatment or combinations of any one or more methods of treatment.

Many patients, particularly those who are out of doors a great deal in the sun and wind develop numerous keratotic lesions on the lower lip. These appear as thickenings and may develop into leukoplakia. In others, these thickenings develop longitudinal or transverse crevices that may develop chronic fissures. Many times these are multicentric in origin and may be scattered over the entire lip.

The first clinical sign of malignancy in many of these is the development of a small stellate and punctate retraction of the mucosa. These small lesions are easily treated by "V" excisions of the mucosa and subcutaneous tissue. When they are multicentric, usually a so-called lip peel or lip shave with advancement of the intraoral buccal mucosa anteriorly to meet the cutaneous margin produces satisfactory results. These lesions should not be treated by irradiation whether in the form of interstitial needles, plaques, molds or X-ray therapy. They do not

need such radical treatment.

Once the diagnosis has been established by microscopically proved biopsy, the physician has at his disposal three main methods of treatment of this condition. These methods of treatment are surgery, X-ray and radium. These agents may be used singly or in combination one with the other. The method of treatment to be decided upon depends upon several factors. The more important of these factors to be considered in the selection of the therapeutic agent can be listed as follows:

1. Previous treatment or lack of treatment.
2. Grade of tumor.
3. Position of tumor on the lip or lips.
4. Size of tumor.
5. Age of patient.
6. Occupation of patient.
7. Adjacent structure involvement.
8. Metastases present or absent.

Generally speaking, in my opinion the preferred method for treatment of carcinoma of the lip is by X-ray or radium therapy when feasible. One notable exception to the policy of irradiating these lesions is recurrent tumor in lesions that have been previously irradiated. The reasons for a recurrence in a previously irradiated lesion are:

1. Inadequate total dosage.
2. Poor time-dose ratio.
3. Irradiation of too small a field.
4. Natural radio resistance of the tumor.

As a general rule, recurrent lesions after irradiation therapy do not reflect inadequacy of irradiation therapy, but more so, an inadequacy of the technique being used. Such recurrent lesions must be treated by surgery.

In previously irradiated tumors, the main factor to be considered in treatment is the removal of all the tumor bearing area and irradiated area with a healthy margin of tissue surrounding this. No particular immediate attention should be paid to the cosmetic results. The primary concern is with the removal of the tumor. Post operatively these patients usually end up with remarkably good lips as a result of the various flap procedures used for reconstruction.

When a person has had previous therapy with salves, electric needles and the like, this

therapy can be completely disregarded in the selection of a therapeutic agent. However, when the patient has had previous therapy in the form of X-ray or radium this automatically places this patient in the surgical therapy classification.

Another notable exception to irradiation therapy for lip carcinoma is found in the early, well differentiated, low grade, button type of squamous carcinoma that is sharply demarcated and very slowly metastasizing. Microscopically, this type of tumor shows much keratinization and the formation of many well differentiated pearls. Grossly, these lesions are hard, usually rounded, circumscribed, and sometimes even movable or actually horny in appearance. This lesion is well treated by a simple shield shaped excision of the lip together with at least $\frac{1}{2}$ cm. of surrounding normal lip with primary closure.

As these lesions become more de-differentiated or anaplastic microscopically, the chance for microscopic extension farther beyond the gross limits of the tumor become greater. It is in these anaplastic type of tumors that irradiation is better employed.

Although the response to irradiation depends to a great deal on the bulk of the tumor it is also an established fact that the more anaplastic tumors are more responsive to irradiation therapy and there is less chance of recurrence along the suture line due to the previously mentioned microscopic spread beyond the gross confines of the tumor. It is in these very anaplastic tumors that no matter how small the initial primary tumor is, irradiation therapy of the entire lower lip is preferred. Even when these very anaplastic tumors are very small grossly, metastases may have already taken place, and in many of these a combined method of therapy must be used.

A presence of a carcinoma in a commissure or on the upper or lower lip near the commissure presents a definite indication for irradiation therapy. Primary and secondary reconstructions of the lip can be well carried out after the removal of more centrally located tumors. With tumors situated this far laterally, reconstruction of the lip is a more difficult procedure, attended with more cosmetic deformity. When the destruction of the tumor can be readily accomplished with X-ray or radium on the commissures, the cosmetic results are excellent.

The larger the tumor, the greater the area

that has to be treated, and the closer the tumor comes to occupying the entire surface of the lip, the greater will be the cosmetic deformity resulting with surgical removal of the lip. In these large lesions, one is usually able to obtain much better cosmetic results with the use of X-ray or radium. The entire lip can be treated, and on the lower lip this can include the quadrangular area from the vermillion border to the lower margin of the mandible with a tumor dose being delivered to this entire area. A very slight cosmetic deformity should result. The only cosmetic defect should be in the defect left from the actual sloughing of the tumor.

In many of these tumors extending over half the vermillion border of the lip, interstitial radium therapy is excellently used. The value of the radium therapy is to develop a tumorcidal dosage throughout the areas treated and producing less cutaneous and mucosal reaction than X-ray therapy given with a comparable tumor dose. It can be delivered over a period of one week, instead of the five or six weeks required for the roentgen dosage by external irradiation.

In the elderly, edentulous person, particularly if the tumor is large, low intensity interstitial radium is used excellently. In a younger person who has teeth present, the necessity of later removing these may produce troublesome infection and complications of post irradiation osteitis and infection from the irradiation. When a person is edentulous, this is one complication that need not be considered. In a younger patient with good dentition, X-ray therapy is given with lead shields being used to protect the teeth. This policy is followed because with the use of radium the dosage is quite high on the contiguous gingiva, and should the teeth have to be later extracted, extreme care must be taken to prevent a post irradiation osteitis in this area.

An important factor to be considered in treatment of carcinoma of the lips in the sunny Southwest, is the occupation of the person afflicted with this condition. Many of these people are out of doors a great deal, and in the sun and wind a high percentage of the time. Particularly if the patient is young and there is any doubt what therapy is to be used, surgery should be given the preference. With surgery used on these patients there is less chance of future reaction or irradiation ulceration when

the condition is aggravated by prolonged sunlight. Even with the most slowly given and best therapy ulcerations do occur after prolonged and excessive exposure to the sunlight. This is particularly true if a large area has been irradiated.

Involvement of the adjacent mandible by direct extension of the tumor automatically classifies the patient as a candidate for surgical excision of the lesion. The cure of lesions that have invaded the mandible is very low by irradiation. The best results are obtained by surgical excision.

The treatment of lip carcinoma metastatic to the cervical lymph nodes is practically always by surgery. The performance of prophylactic radical neck dissection in carcinoma of the lip is not indicated. It has been demonstrated, that of the patients who are free from lymph node involvement at the beginning of therapy, less than ten percent develop lymph node metastases after adequate therapy to the original site(1). If lymph node metastases do develop, the treatment becomes primarily one of surgery in the form of radical neck dissection. The solitary involvement of a submental or submaxillary node in a relatively low grade tumor can be treated by unilateral or bilateral superhyoid neck dissection. As a rule, complete radical neck dissection should be done, however. This is particularly true with the more anaplastic tumors.

Lip carcinomas that metastasize to the neck are, as a rule, of the more malignant nature, and complete radical neck dissection is usually indicated. In the extreme anaplastic tumors where bilateral cervical metastases have taken place, or where the lower cervical nodes or supraclavicular nodes are involved, interstitial radium therapy or X-ray therapy may be used in the treatment of these nodes. However, I believe the treatment of cervical metastases by irradiation is limited to this group.

Occasionally, and particularly in the larger lip tumors, the combination of surgery and irradiation

therapy may become necessary. This may be necessary with very large, bulky, or exophytic tumors, or with tumors where metastasis has taken place. If these tumors are very exophytic and project out a great deal from the skin, it may be advantageous to remove the bulk of the tumor by electro-surgical therapy and to treat the base of the tumor by irradiation therapy of some variety. Many times these tumors are quite superficial and look a great deal worse than they actually are. After removal of a great bulk of the tumor with either the cold knife or diathermy, the treatment of the tumor base by irradiation is much simplified, and if radium is used, a much simpler one plane implant can be done. If external irradiation is used, the depth dose is no problem.

IN SUMMARY, I would like to say that lip carcinoma is best treated by X-ray, radium or surgery, depending upon the factors just mentioned. There should be no routine treatment.

The important factor in surgical treatment is the complete excision of the tumor and a generous area of healthy surrounding tissue. This is best judged by gross clinical experience and by frozen section microscopic examination at the time of surgery. If the tumor is treated by a low intensity interstitial radium therapy, one should aim at a total dosage of between 6000 and 7000 gamma roentgens being delivered over a period of six to seven days. When X-ray therapy is used, the aim of the therapy should be to irradiate an area at least as large as would be removed surgically, and to deliver a total dosage of at least 6000 roentgens in a period of time extending from four to six weeks.

The prognosis for cure is good in these tumors, and excellent cosmetic results can be obtained. One should consider the cure of the tumor of primary importance with the cosmetic result only of secondary importance.

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ASCITES

By Mahlon Delp, M.D.
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I. Historical

- Term introduced by Trevisa in 1389.
- Derivation of term — Greek *askos* meaning bag.
- Egyptians 1500 B.C. recognized and associated collections ascitic fluid with liver disease.
- Erasistratus 250 B.C. noted occurrence of ascites with damaged liver.
- Celsus 20 B.C. recommended abdominal paracentesis.
- Paul of Aegina treated ascites by drainage thru copper tube.

II. Ascites — Clinical Syndromes

- Congestive Heart Failure (Hepatic Congestion) Mitral Stenosis with tricuspid insufficiency.
- Constrictive Pericarditis
- Caval Obstruction
- Cardiac Cirrhosis
 - Laennec's cirrhosis
- Acute liver injury
- Portal thrombosis
- Carcinomatosis
- Myxedema

III. Ascites: Experimental Production

- Cirrhosis from embolic or toxic injury.
 - Carbon tetrachloride
 - High fat, low protein diets
 - Portal embolism with barium
 - Radioactive gold
- Liver engorgement
 - Constriction of vena cava just above hepatic veins.
 - Ligation of portal vein with plasmapheresis.

IV. Ascites: Formation Factors

- A. Principles of fluid exchange (Starlings Principles)
 - Hydrostatic pressure in capillary 32 mm Hg.
 - Hydrostatic pressure in venule 12 mm Hg.
 - Osmotic pressures
 - Crystalloids
 - Colloids
 - Tissue tension
 - Capillary permeability

Ascites: Factors in formation of fluid.

- B. Portal hypertension
 - Plasma proteins
 - Intra-abdominal tension
 - Sodium and water retention

Hormonal influences

Venous pressure elevation (volume receptor mechanism)

Ascites: Formation Factors

C. Portal hypertension

Measurements of portal pressure difficult — direct, or catheter.

Normal pressure 15-25 cms. water.

In Laennec's Cirrhosis may be 20-50 cms. water.

Usual increase could result in only mild increase in splanchnic pressure.

Presence of detachable portasystemic venous communications may actually be associated with a lower pressure.

Patients with high portal pressure may have no ascites or vice versa.

Portal occlusion or constriction with plasmapheresis and sodium administration does result in ascites.

Portal hypertension then contributory but not dominant factor.

Ascites: Formation Factors

D. Plasma proteins

Effective colloidal osmotic pressure exerted by plasma proteins especially albumin.

Protein in ascitic fluid electrophoretically similar to plasma proteins but slightly lower in content.

Particularly true in congestion of liver — protein value varies from 0.5 - 4.5 gms. per cent.

Crude correlation between presence of ascitic fluid and plasma albumin values of 3.0 gms. per cent or less.

Albumin intravenously exerts little effect clinically.

Albumin intraperitoneally while resulting in no increase in ascitic fluid is followed by increase in plasma albumin level.

Ascitic fluid protein then does not seem to exert great effect in retaining ascites.

Experimental ascitic dogs given low protein intake with salt collect fluid rapidly.

Experimental animal given high protein, low salt loses fluid.

Plasma and ascitic proteins are not dominant in control of ascitic fluid collection.

Plasma protein osmotic pressure is of second

dary importance.

Ascites: Formation Factors

E. Intra-abdominal tension.

Pressure may vary from 20-50 cms. of water.

Rapidity of collection factor in high tensions.

Might reason that would retard ascites formation.

Does contribute to edema of extremities by pressure on vena cava — may influence general venous pressure.

Possible effect from pressure on portal vein. Actually with slow collection of fluid little elevation of pressure.

Paracentesis often results in more rapid formation.

Influence must be minor.

Ascites: Formation Factors

F. Sodium and water retention.

Recognized factor in edema in general.

Scanty output of sodium in urine of patient with ascites — 1-5 meq./L on normal Na intake.

Serum sodium levels not increased.

Similar phenomena seen in cardiac patient with congestive failure.

High protein low sodium diets followed by slow increase in sodium output, loss of ascites and gradual increase of serum sodium levels.

Eventual return to normal sodium metabolism.

Same phenomena seen in experimental ascitic animal.

Sodium very important in pathogenesis ascites.

Ascites: Formation Factors

G. Hormonal control of sodium and water excretion.

Sodium excretion not controlled by renal blood flow nor glomerular filtration rate.

Sodium excretion by renal route controlled by renal tubular resorption.

Kidney itself does not determine when and how much sodium to save. It responds to some distant exciting or trigger mechanism, i.e. cirrhosis, venous engorgement, hepatic congestion.

Adrenal cortical hyperactivity suggested.

Adrenal steroids ordinarily exert sharp influence of sodium excretion and urine output.

In experimental ascitic animal steroids exert little effect. Adrenalectomy clears ascites.

Cirrhotic patients excrete little sodium in sweat and saliva.

Similar phenomena seen with large doses of DCA.

Antidiuretic hormone of posterior pituitary may act directly on renal tubule.

Ascites: Formation Factors

Liver may in failure be unable to inactivate hormones of the adrenal and pituitary.

VDM (ferritin) released by the damaged liver may influence urinary output.

Sodium retention of unquestionable importance in ascites formation.

Ascites: Formation Factors

H. Venous Pressure Elevation

Critical elevation of venous pressure said to influence sodium excretion before edema appears?

Constriction of portal vein does not produce such.

Constriction of vena cava below diaphragm does not produce such.

Congestion of the liver regardless of how produced does so influence sodium excretion.

V. Ascites: Sequence

Hepatic congestion with circulatory failure. Liver cell damage and death from anoxia and nutritional lack — diffuse hepatic fibrosis.

Transudation of fluid and protein into tissue spaces of liver.

Mechanism for retention of salt and water by kidney triggered.

Liver lymphatics engorged with proteinous fluid weep into the peritoneal cavity.

Loss of plasma proteins into ascitic fluid makes more critical vicious circle.

VI. Ascites: Treatment

A. Relieve heart failure.

Rest.

Digitalis.

Diuretics.

Salt restriction.

Fluid balance.

Mitral valve surgery.

Removal constricting pericardium.

B. Relieve liver failure.

Rest — bed.

Digitalis?

High protein, high carbohydrate diet.
 Adequate vitamins.
 Salt restriction.
 Diuretics.
 Fluid balance.
 Paracentesis?
 Shunt surgery?
 Hepatic artery ligation?
 Steroid therapy??

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THYROID THERAPY IN WOMEN

By Joseph B. Raddin, M.D.

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THE MOST common endocrine gland dysfunctions encountered in medical practice today are those of the female endocrine gland system: the anterior pituitary, the thyroid, the two ovaries and the two adrenal cortex glands. The anterior pituitary is the great 'regulator' of thyroid, ovary and adrenal cortex function. These glands are sometimes referred to as the 'target' glands of the anterior pituitary. It is impossible to study thyroid function without considering the effect of the hormones of the other female sex endocrine glands on thyroid gland function.

THE ANTERIOR PITUITARY GLAND HORMONES

It is today, generally accepted that the anterior pituitary gland secretes at least six distinct hormone principles: —

1. FSH — follicle stimulating hormone which stimulates development of follicles in the ovary and the regulation of secretion of estradiol by the ovary.

2. LH — luteinizing hormone acts on the ovary after ovulation to stimulate luteinization and to promote secretion of progesterin.

3. LTH — luteotropic hormone, in conjunction with estradiol, stimulates proliferation of the mammary milk glands and ducts and initiates milk secretion by the mammary glands post-partum. It has also been named prolactin and lactogenic hormone. LTH is also responsible for the final development and functional activity of the corpus luteum.

4. TSH — thyroid stimulating hormone which stimulates thyroid activity and release of its hormone thyroxine and related hormones.

5. ACTH — adreno-cortico-tropic hormone which stimulates adrenal cortex secretion of its hormones.

6. Growth hormone — which causes striking effects in experimental animals but little effect in humans. It has been stated to be identical with insulin.

Each of these anterior pituitary hormones stimulates its particular target gland to functional activity and secretion of its appropriate hormone. To prevent over-secretion of a hormone by a target gland, anterior pituitary secretion of the trophic hormone is normally slowed and stopped when the amount of the

target gland hormone has reached normal concentration in the blood. Anterior pituitary function can thus be compared to a thermostat on a furnace.

Whether orally or by injection in physiological dosage, the therapeutic effect of thyroid extract and of the steroid hormones, estrogen, progesterin, testosterone, cortisone and other adrenal cortex hormones lies in replacement of a deficiency of the particular hormone. Ordinarily such therapy tends to depress or suppress temporarily the function of the particular endocrine gland while its hormone is being administered. Such therapy is here called SUBSTITUTION therapy.

STIMULATING therapy may be defined as increasing anterior pituitary function so that its trophic hormones are secreted in normal or adequately balanced amounts. Such therapy enables the patient's own ovaries, thyroid and adrenal cortex glands to secrete their own hormones in normal amounts. When successful, long periods of remission of symptoms of deficient secretion of target gland hormones follow. In young women cure is often obtained.

A brief review of female endocrine gland function will clarify some of the remarks which follow.

The ovaries and testes are now believed to metabolize cholesterol to secrete both estradiol and testosterone in proportionate quantities in each sex(8).

The adrenal cortex can apparently metabolize cholesterol to cortisone and the several other cortisone-like hormones as well as estradiol and testosterone or related hormones in each sex(8).

The thyroid gland is believed to secrete only thyroxine by metabolizing iodine from the blood. The thyroid is only indirectly concerned with cholesterol metabolism.(1).

THYROID GLAND FUNCTION.

Thyroid gland function is normally directly stimulated by TSH. Indirectly, thyroxine secretion and basal metabolism is influenced by estrogen blood levels in both males and females(2). TSH stimulates thyroid gland secretion of thyroxine until the desired thyroxin level in the blood is reached. This blood thyroxine level then slows or stops TSH secretion until the blood level is again lowered to the point

at which TSH is again secreted. High estrogen blood levels apparently permit a higher blood level of thyroxine before TSH secretion is reduced or stopped. Experimentally the thyroid gland has a low rate of spontaneous function when TSH is wholly lacking as indicated by a PBI value of 3 to 4 mcg. %. Following total thyroidectomy PBI values are often 1 or 2 mcg. %. Protein Bound Iodine values are believed to be a direct measurement of thyroxine content of the blood. The source of this thyroxine following total thyroidectomy is not presently known.

TSH action on the thyroid gland is two-fold. First, it stimulates hypertrophy and hyperplasia of the secretory epithelium. Second, it stimulates synthesis, storage and release of thyroxine(1). Iodine therapy tends to increase the synthesis and storage of thyroglobulin and temporarily to inhibit the release of thyroxine into the blood. A high level of serum thyroxine as measured by the PBI test tends to inhibit further release of thyroxine from the thyroid gland by inhibiting TSH secretion.

Definitions of simple goiter, myxedema and hypothyroidism will be reviewed:

Simple goiter is due to an absolute or relative lack of iodine in the diet. When the deficiency is mild, simple goiter is not accompanied by alteration of thyroid function.

Myxedema is caused by complete or almost complete lack of thyroid function. Mild degrees of myxedema should be labeled hypothyroidism because by definition there can be no mild degree of complete or almost complete lack of function. True myxedema is rare. Hypothyroidism is common. Occasionally myxedema is secondary to lack of TSH, the so-called pituitary myxedema.

In hypothyroidism there is a depression, rather than a cessation of thyroid gland function. It is probably overlooked as a diagnosis more frequently than any other endocrine gland dysfunction. The symptoms are of the same nature as in myxedema except for the edema but they are less severe.

GENERAL PRINCIPLES OF THERAPY OF THYROID DYSFUNCTION.

1. Iodine.

Iodine is an essential constituent of the thyroid hormone. Three factors apparently influence the amount of iodine used (uptake of iodine) by the thyroid gland. First, simple or colloid

goiter will take up much more iodine from the blood than will the overactive gland of hyperthyroidism. Second, the blood level of inorganic iodine depends on iodine intake in the diet. Third, TSH regulates the speed and completeness of the conversion by the thyroid gland of iodine into thyroxine(3).

2. Thyroxine.

Thyroxine can be given subcutaneously, intramuscularly or intravenously. Its irregular and incomplete absorption from the gastro-intestinal tract makes it less useful than thyroid by mouth(3). It is also more expensive.

3. Thyroid, U.S.P.

The organic iodine content of thyroid is the official index of potency.

Therapeutically thyroid is slow acting, the full effect of a single dose is not manifest for about a week, after which its action gradually diminishes. The slow action of thyroid makes daily dosage cumulative so there is no advantage in subdividing the daily dose. A thyroid tablet does NOT make a normal or hypothyroid individual 'nervous' a few hours following ingestion. It is not possible to gauge accurately the effect of a given dosage of thyroid until it has been taken for ten to fourteen days. Because many of the actions of thyroid are trophic on such structures as the skin, nails and hair, several weeks or months must elapse before the full effects of therapy can be observed.

Paradoxically, the dosage of thyroid varies inversely with the severity of hypothyroidism. In myxedema, initial dosage should be 1/10 grain daily. The more severe the deficiency, the more sensitive is that individual to thyroid medication. In mild or moderately severe hypothyroidism without myxedema, it is usually good practice to start therapy with a daily dose of 1 grain daily. Individuals with normal thyroid gland function can usually tolerate twelve to fifteen grains of thyroid daily before noting manifestations of overdosage. The normal thyroid-anterior pituitary axis is capable of tremendous compensatory inhibition when thyroid is administered(3).

Thyroid is of limited value in the treatment of obesity. As an adjunct to diet and other measures it helps to maintain morale and physical strength. It also aids body water metabolism(3)(4).

A therapeutic trial of thyroid is the last

resort of appeal when the diagnosis of hypothyroidism is uncertain. It should not be undertaken casually(3)(7). It should, however, be undertaken more frequently than it is in chronically ill and nervous women.

4. Simple goiter.

Iodized salt prevents simple goiter. Small daily dosage of potassium iodide or Lugol's solution for a few months will effectively shrink an adolescent goiter. Fractional dosage of thyroid is probably preferable.

5. Myxedema.

Cautiously increasing dosage of thyroid from 1/10 grain daily as tolerated is the only presently known substitution therapy for true myxedema(3).

6. Cretinism.

Congenital myxedema is rare. Thyroid must be started during the first few months of life to obtain any real benefit. It must be continued for the lifetime of the patient. Results of therapy are poor.

7. Hypothyroidism.

Therapy for hypothyroidism has traditionally been thyroid. The dose required is larger than in myxedema, the tolerance to overdosage is greater, and the variability in requirements from one patient to another is much wider(3)(4). However, a true hypothyroid individual is unable to tolerate the ten to fifteen grain daily dose which the euthyroid person can tolerate.

When the thyroid gland is unable to respond to TSH stimulation, thyroid substitution therapy is mandatory.

If the anterior pituitary gland is unable to secrete adequate amounts of TSH, thyroid substitution therapy is mandatory.

Neither the basal metabolic rate, blood cholesterol and cholesterol ester values nor any other laboratory procedures are able to establish diagnosis in most cases of mild hypothyroidism. Nevertheless these tests, as well as the PBI and radio-active-iodine-uptake tests, all give information of value in deciding on therapy.

The PBI-TSH test is most useful to differentiate primary from secondary hypothyroidism. A clear and concise statement about these diagnostic questions is quoted from Thompson(9): —

“An interesting related problem is the difference in the manifestations of hypothyroidism between the primary type (inability of the thyroid gland to respond to TSH stimulation) and the type that is secondary to hypo-anterior-

pituitarism (lack of adequate amount of TSH secretion by the anterior pituitary gland.) Patients with the secondary type have little or none of the characteristic edema, they do not gain weight and their skin is soft and delicate rather than dry and scaly. Both types of patients have hypothyroidism but the clinical manifestations are different.

“In patients with the primary type, the administration of desiccated thyroid eliminates all of the manifestations of the disease, but in patients with the secondary type the administration of desiccated thyroid corrects only some of the patient's symptoms. Those that are not corrected are presumably related to other glandular deficiencies secondary to the hypothyroidism”(9).

The therapeutic test using thyroid is the court of final appeal for the diagnosis of many cases of hypothyroidism(3)(7).

8. Thyroid Stimulating Therapy.

When thyroid is given at a dose of three grains or more daily to a hypothyroid or euthyroid person(4), it is believed the blood level of thyroxine is such that the anterior pituitary does not receive any stimulus to secrete TSH. Therefore, three grains or more of thyroid daily is substitution therapy. While thyroid will relieve all the symptoms and complaints which are due to primary hypothyroidism, such therapy is not curative and must be continued indefinitely.

Normal thyroid function can be stimulated in one or several ways, providing only that the thyroid gland is able to respond to TSH stimulation. This ability is easily determined by the PBI-TSH test. To ‘cure’ hypothyroidism, normally adequate secretion by the anterior pituitary gland must be attained to insure the steady liberation of thyroxine stored in the thyroid gland as well as to increase its thyroxine manufacturing capacity.

Primary hypothyroidism is apparently comparatively rare, at least as determined by the PBI response to TSH test stimulation. Pregnant mare serum hormone has been demonstrated(5) to have the ability to stimulate anterior pituitary secretion of TSH for long periods. Since hypothyroidism is commonly of the secondary type, pregnant mare serum hormone stimulation of the anterior pituitary often ‘cures’ or gives prolonged remission of hypothyroidism.

One method to stimulate thyroid gland func-

tion is to prescribe a daily dose of $\frac{1}{2}$ or 1 grain thyroid. This dose often seems to 'rest' the gland. When, after a few months of medication, the thyroid is gradually reduced and finally stopped, it is common clinical experience for the thyroid gland to resume normal function.

A second method is to stimulate ovarian function with 0.10 mg. stilboestrol daily(10). There is a close relation between estrogen blood level and thyroid gland function. Studies(6) have demonstrated "that the concentration of serum precipitable iodine SPI (which is identical with PBI), a reliable index of circulating thyroid hormone, increases in men and women during the administration of estrogen. . . . Normal function of the pituitary and thyroid are necessary for the reaction to occur." Briefly, increasing ovarian function increases thyroid function.

Finally, after a woman has been 'primed' with thyroid and stilboestrol, pregnant mare serum hormone in adequate dosage and properly timed will stimulate yet more thyroid function.

CLINICAL EXAMPLES OF THERAPY FOR HYPOTHYROIDISM.

A clinical application of thyroid substitution therapy is illustrated by pregnancy. A woman who has needed two grains of thyroid daily to maintain normal health and perhaps to overcome sterility, must by the fourth month of pregnancy ordinarily reduce the dose to one grain daily. By the seventh month it must usually be stopped. Failure to do so commonly induces symptoms of hyperthyroidism. This effect is believed due to the activity of the fetal thyroid. Six weeks or more following delivery of her baby, the same dose (in this example two grains daily) of thyroid that was required before conception will be needed to maintain normal health.

Therapy for adolescent acne vulgaris will illustrate the three methods of stimulating thyroid gland function.

First, thyroid gr. 1 daily for several months will regularly cure mild acne in that remission continues long after the thyroid has been stopped.

Second, when the acne is more severe and good relief is not obtained with thyroid alone, adding 0.10 mg. stilboestrol daily to the thyroid will usually be curative in young girls after several months administration.

Third, should severe acne of long duration with keloid and scar formation resist this 'priming' therapy, pregnant mare serum hormone is then given. The thyroid and stilboestrol is continued until remission of the acne.

For many years I have accumulated clinical evidence that pregnant mare serum hormone effect in girls and women before their menopause is more than FSH alone. Given in adequate dosage at properly spaced intervals, it has a slow but prolonged stimulating effect on both ovarian and thyroid function(5). It has also been demonstrated by basal body temperature charts to induce regular ovulation beginning three or four months after intravenous administration of sufficient hormone. I know of no method to determine what constitutes 'adequate dosage.' Nor have I yet encountered a case of adolescent acne vulgaris which failed to respond to one or more forms of therapy suggested. Since the therapy can be stopped and the acne remain in remission, this therapy is stimulating rather than substitution in type. The latter would have to be continued indefinitely to maintain 'cure.'

SUMMARY.

Hypothyroidism is probably the most common endocrine gland disorder encountered in general medical practice. It is seldom considered as a diagnosis because moderate degree of underfunction which causes sufficient ill health to induce a woman to seek relief cannot be identified by any laboratory procedure. General principles of thyroid therapy are discussed. Two examples of thyroid therapy illustrate these principles.

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CANCER RESEARCH

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THE DEVELOPMENT of research with reference to the cancer problem has paralleled the development of the American Cancer Society. This is not only because the Cancer Society has functioned as a collecting agency and an educational agency but possibly the effectiveness of this organization in showing the interest and needs of the American public has stimulated Congress to bring about added appropriations from public funds which are now being quite instrumental in advancing this field.

One hardly knows how to approach a review of this sort. As to the status of research and knowledge, in an extensive field, one cannot help but feel that while the answer cannot be given today we may be in a position very comparable to that in the '20s just prior to the discovery of insulin by Banting and Best. It is reported that two medical students upon finding sugar in their urine committed suicide within the following week yet within one week of their drastic action, Banting and Best reported the discovery of insulin, an enormous step forward in the control of that vicious disease, diabetes.

My interest in the cancer problem and cancer research dates back to working as an extern at Barnard Free Skin and Cancer Hospital in St. Louis in 1937. Later I returned to this hospital as a resident in surgery and with the start of World War II in 1941 those of us interested in this field were dismayed that the total expenditure for cancer research in the entire United States was only equivalent to the cost of two Grauman fighter planes or approximately \$150,000. In Barnard Hospital alone we had only three full time research individuals, all of them refugees on a very limited stipend and only two additional part time research fellows.

At the time of the development of the American Cancer Society in 1946, less than \$1,000,000 was being spent annually for cancer research. By 1955, 10 years later, the American Cancer Society had developed a program that brought about a collection of funds of \$27,000,000, approximately \$7,000,000 of this devoted to re-

search in the field of cancer. This is an impressive advance and yet a rather poor comment upon our civilization when one considers that one in four of all Americans living today will develop cancer and of these we will cure only one in three. In Arizona alone we are losing approximately three patients per day by death from cancer. During the past ten years the deaths in this State have risen from approximately 6,000 to 8,000 but during that time deaths from cancer have risen from 418 to 979. Cancer deaths more than doubled in contrast to the limited increase in overall deaths attributable in part to the increase in our population.

It is a rather poor comment upon our civilization, when the tobacco industry alone is spending approximately \$60,000,000 a year for advertising, we are spending only \$55,000,000 a year for the total research program in this country. Approximately \$7,000,000 derives from the Cancer Society, \$48,500,000 from appropriations by Congress to the National Cancer Institute. An appalling comparison is that this figure devoted to cancer research is only twice that being spent yearly for nail polish by the American women. Or, to drop back to this great foe of ours, possibly one of the prime suspected causes for an increase in cancer in this country, the tobacco and tobacco products industries are receiving from the American public 100 times the expenditure that is going into cancer research. \$5,250,000,000 per year is spent for the purchase of tobacco items.

For the year 1957 Congress has appropriated to the National Cancer Institute \$48,500,000 for research and an additional grant of \$30,000,000 yearly for the next three years for the construction of research facilities. You will note that this amounts to approximately \$1.00 expended per year for cancer research for each of the potential 40,000,000 cancer cases in the United States.

Not very long ago, I was more optimistic that we would have an early answer to the cause of cancer, and with it, the likely cure. One year ago Dr. Cameron pointed out that we had the pieces of a jigsaw turned face up and now all that remained was putting the pieces together. As we have attempted to put

the pieces together it becomes quite evident that it is not a matter of putting one jigsaw puzzle together but possibly we have one to three hundred jigsaw puzzles, all mixed. Now the facts that have been established must be relegated to the specific cancer concerned and not dumped into one pot as applicable to all malignancies. Cancer is many diseases, having one factor in common — tumor formation. If it were a single disease the next quarter of a century would certainly yield a specific cure. But we are dealing with hundreds of forms. Some have been cured, others will respond to treatment in the near future, while others may evade cure for many years.

To understand the problem or the research necessary many facets must be pursued. 1. As to the causes, a consideration of the hereditary factor and undoubtedly the environmental factors. 2. As to forms of treatment, the role that chemicals may play in cure. 3. The possibility of development of antibodies or an immunity by the host. 4. The role of hormones in etiology and cure. 5. The status of our presently accepted modes of treatment such as surgery, irradiation, X-ray, radium and the radioactive isotopes.

Bearing in mind that we are pursuing the cause and treatment of many varieties of tumors, cancer research becomes a probe into the fundamental processes of life, a search to determine how cancer can be prevented, how it starts and once it has started, how it can be halted or the process even reversed.

This has led to two fundamental schools of thought for investigators. One asserts that the most effective way to speed this conquest is through fundamental research, i.e., investigation into growth processes. Secondly, we have the school that supports the exploitation of any approach that has already yielded means to combat other important afflictions of man. To attain a coordinated research program, a balance must be approached between these two concepts — one the highly speculative approach and the other the ultra-conservative attack.

To start with an investigation of the causes of cancer there are many aspects and not all call for laboratory research. Studies are being carried out as to environmental cancer. Our present industrial civilization seems to have developed over 400 chemical substances that are carcinogenic. The air we breathe contains

many hydrocarbons that will cause cancer. Among these are coal tar products, soot, incompletely combusted gases and oils, cigarette smoke and smog.

Carcinogenic agents may cause cancer only in specific organs of the body as for example:

Arsenic, tar, cresote, crude paraffin oils, X-rays, radium and sunlight can and do cause skin cancers so evident in sailors and farmers. The increased incidence noted in skin cancer through Florida, Texas, Arizona and California has been ascribed to sunlight. The various sprays, particularly those containing arsenic as used by the vineyard workers in France, will cause skin cancer.

Cancer of the lung can be precipitated by asbestos, chromate powders, nickel carbonyl, tar fumes, ionizing radiation as noted in the pitch-blend miners of Czechoslovakia. We, in the United States in recent years, have become concerned with the marked increase of cancer of the lung in the cigarette smoker.

Nickel carbonyl, isopropyl oil and radioactive dust and gases are accepted causes for cancer of the nasopharynx and sinuses.

Aromatic amines as used in the synthetic dyes, cause cancer of the bladder. This is noted particularly in the synthetic azo dye industries of Switzerland and Germany. In Egypt a problem is presented by the bladder parasite, *shistosoma*, which appears to cause bladder cancer.

Radium and mesothorium produce bone sarcoma. This was noted following World War I in the women who painted the radium dials of the early luminescent watches and pointed the brushes with their teeth and lips.

Benzene and radiation cause leukemia. It is well known that leukemia is much more common among radiologists, possibly eight times as frequent among radiologists as in the M.D. group in general. The too-hot clay pipe has caused many cancers of the lips, particularly in Holland. In the Moslem world, with repeated shaving of the skull with a blunt instrument and its associated irritation, they have an unduly great number of scalp cancers. In the Philippines, mouth cancer seems to be caused by the leaf-wrapped betel nut. The natives of India have numerous skin cancers from the constant chafing of fibrous cloth.

These are some of the hazards and you will note that they are all constant irritants, but

only in the form and amount in which they are handled in the industrial processes or for a long period of time. It must be noted that it usually takes an exposure to these various irritants between 1/8th and 1/12th of the life cycle of the organism to precipitate a malignancy.

Recently, at the International Union Against Cancer held in Rome, many of our present day contacts were considered as possible or potential cancer hazards, including cosmetics, food wrappings and food preservatives. I mention these purely as potential and not proved factors of cancer production.

The listing of environmental factors may have taken you far afield from the specific research in cancer but our problem is this: What advances are being made in cancer — in the determination of its causes, prevention and treatment? In seeking an answer the environmental factors and possibly the geography of cancer are significant. Recently a geographical pattern has been noted. There is a distinct pattern following the Appalachian range from Alabama to New England that shows a surprising incidence of cancer. There are other patterns of unusually high cancer death rates in Florida, Kentucky and central Texas. There is one pin-point area around Hagarstown, Maryland where there are particular houses with an unusual record of multiple cancer deaths through the years.

As to the more generally accepted methods of research — recent studies pursuing the innermost secrets of the cell, and applying them to the two established methods of curing cancer — radiation and surgery — have come up with some basic concepts, but actually with few answers.

With the electro-microscope, molecular particles have been isolated, particles that play a vital role in cancer reproduction. Chromosomes and genes are yielding secrets of their control of growth and these may be fundamental. To date, only three rare kinds of cancer have been found to be transmitted as inherited characteristics. They are:

1. Multiple polyposis of the colon, which is a pre-malignant lesion.
2. A retinoblastoma, which is a cancer of the eye.
3. Xeroderma pigmentosa, which may become a skin cancer.

However, there is more to the heredity factor than this would imply. We know that 2% of all women will develop cancer of the breast. Yet, 7% to 8% of the close blood female relatives of breast cancer patients will develop cancer of the breast.

Recently, and of great importance, research personnel have developed the technique to cultivate human, as well as animal, cancer cells artificially in another animal, in the embryo of the fowl egg, or in the test tube. This will give us the chance to do with cancer cells almost the same things that have been done with bacteria, and so, may bring about chemical control of cancer. It certainly will bring about added knowledge as to the viruses and their relation to malignancy.

It is evident that one virus or another may play a role in causing cancer. In other cases there is an antagonistic action by the virus to a malignancy, for in some animals a cure of cancer has and can be brought about by the inoculation with a virus. Years ago, Rhou isolated a virus which caused chicken sarcoma. More recently a virus has been found which will cause leukemia in adult mice. More important however, a vaccine can be made which will cause immunity to this leukemia in adult mice; an immunity that is, in the animals that are otherwise susceptible.

Immunity is not a new concept to you in most diseases. It may be a questionable concept in cancer. You have been aware of it in the temporary resistance transmitted passively by the modified protein component, gamma globulin, in measles. It can be stimulated actively, as in smallpox vaccination, tetanus and typhoid inoculation.

There is good evidence that in some men a specific immunity or resistance does develop to spontaneous cancer. To date, we have been able to provoke little of this resistance by vaccination in man. However, evidence of this resistance to cancer by certain individuals can be found in a number of cases:

1. Where local deposits of cancer cells are found by accidental discovery at the time of surgery, to exist and yet have shown no evidence of spread.
2. Where cancer which is already known to be invasive to the individual may suddenly show a very slow development or even become quiescent.

3. In cases of desseminated cancer that have been noted to regress.

4. Dr. Rhoads of the Sloan-Kettering Institute for Cancer Research believes he has "definite proof" of special immunity against malignancy in humans. His fundamental finding is that:

A. Cancer cells implanted into a normal patient will be "sloughed off in a rejection action."

B. But, if the cancer cells are implanted into volunteers already afflicted with cancer they will grow.

Now in these cases a specific circulating antibody has not been found, but a chemical component of fat has been found which exists almost exclusively in cancer tissue. It is capable of inducing an immune reaction when injected into animals of other species. This determination, in itself, of a unique chemical component of the fat of cancer cells, indicates the possibility of 1. An enhancing effect upon the defense mechanism in the body, or 2. A diagnostic test for cancer; a test for those minute foci of early cancer which cannot be detected clinically. While antibodies have been found in the blood of animals with cancers, they are minute in amount and ineffective to control the tumor. However, by a combination of immunology and drugs, the possibility does exist of increasing these antibodies artificially. This has been done with antibodies against viruses and bacteria.

Not only do we have to consider the possibility of the immune reaction, or the antigen-antibody system, but as noted previously, there are certain cancer destroying viruses. Virus have been found which will cure transplanted cancers in animals and certain viral strains will effectively destroy human cancer in the test tube. To date, they have not been successfully applied to clinical cancer cases in man.

Further, from a chemical aspect, human cancer tissue contains certain protein components which are not present so frequently nor in so great an amount in normal tissue. This protein component can provoke immune reactions. Secondly, certain protein components are absent in cancer tissues although they are regularly found in normal tissue. Here then, a chemical difference is noted leading us to the possibility that a chemical may be found which will affect the specific protein alone and so be damaging to the cancer cell alone.

If so we may take a long step forward in the treatment of this group of diseases.

The finding of differences in the chemistry of the cancer cell, a unique component in the fat and an altered protein pattern may be highly significant.

These unique chemical factors have led to an extensive effort to find medications or drugs effective against the cancer cell alone. Much of this search is on a plotted course, on a selected use of drugs. Some steps, however, seem almost a random investigation of innumerable compounds.

It is my belief that the concept of damaging the cancer cell alone is not too far removed. This viewpoint that the cancer cell can be damaged alone by chemicals while it does seem feasible to many of us, is not conceded even in recent German publications. It is to be noted however, that the National Cancer Institute considers it of such practical significance that it has devoted \$20,000,000 in the coming year to investigate the possibilities of Chemotherapy for cancer.

Alazopeptin, an antibiotic, is reported as effective against some cancers in mice. Several other antibiotics, Actinomycin C & D, Puro-mycin, and Azaserine are supposedly active against mice tumors. Their effectiveness against human cancers is not conclusive.

Chemotherapy has been used to a great degree in the lymphomas but the effect is suppressive and not a curative one. Following is partial list of chemical substances currently in use:

In Hodgkins disease — Nitrogen mustard, TEM, Tetpa, Phenol nitrogen Mustard and CV 1348 are used. Here the adrenal cortical hormones are helpful.

In acute leukemias — ACTH and cortisone are used to advantage.

In chronic leukemia — CV 1348 is the best treatment to date for lymphatic types. Myleran seems superior for myelogenous forms.

In lymphosarcoma — TSPA, Thio-TEPA, TEPA, TEMP, HN-2.

In polycythemia vera — TSPA-DEPA, Thio-TEPA, TEPA-TEM, p-32.

In multiple myeloma — Cortisone — urethane, I-131, p-32.

Some of these drugs, particularly nitrogen mustard, are being used at the University of Illinois College of Medicine at the time

of surgery. Nitrogen mustard is given intravenously after excision of the malignancy to destroy metastasizing cells before they can fix in distal sites.

The basis of this work has been to inject suspensions of tumor cells intravenously into rats. In addition, some of the rats were given nitrogen mustard intravenously and intraperitoneally. 97% of the rats receiving tumor cells alone developed liver metastasis; while only 19% of those given nitrogen mustard developed metastatic liver implants.

Dr. Cole and his associates have pursued this course of treatment in 45 cases of breast, stomach and colon cancer. Intravenous administration in all cases, and intraperitoneal in the abdominal cases. Nitrogen mustard is then given daily the first three postoperative days and then a four day course is repeated in three months.

Dr. G. E. Moore of Buffalo reports some remissions in breast cancer with Thio-TEPA.

Within recent years, hormones of which you are so aware, as Cortisone, ACTH, Hydrocortisone, etc., have opened a new field. For many years male and female sex hormones have played a considerable role in cancer stimulation or suppression, particularly against breast and prostatic carcinoma. The adrenal steroid hormones have now been shown to have a comparable role.

Each individual has his own pattern of function of these glands of internal secretion — abnormal function is probably associated with certain precancerous or cancerous changes. Determination of the proper balance of these hormones, the male or female sex hormones, the steroid hormones of the adrenals, or the secretions of the pituitary, are probably keys to cancer development and control. These present an area for rapid and enormous progress, possibly not only in relation to cancer, but also to all of the degenerative disorders.

A question that may be present is — Why the Cancer Society has not used Krebiozen, a drug claimed by some as the most valuable cancer treatment discovery of this century. Dr. A. C. Ivy, a former University of Illinois physiologist, has been the center of considerable medical storm in the past five years in relation to this "secret" cancer drug. It has been studied by independent critical assays, and the AMA has flatly rejected Krebiozen as

a treatment. However, Dr. Ivy and his colleagues have continued to pursue this field and have summarized their work recently in a publication "Krebiozen in the Management of Cancer." This drug is a white powder prepared from the serum of horses that have been injected with actinomyces. It was discovered by Dr. Durovic of Yugoslavia. Dr. Ivy's group reports rather marked suppressive effect, and even tumor-dissolving qualities. However, the product has not been offered for broad research. Possibly, it deserves further testing, but to date, we have very little proof as to its effectiveness. In fairness to Dr. Ivy and his group, it has been used practically, or almost exclusively in terminal, or the hopeless stage of malignancy.

Surgery, which is the oldest method of treating cancer and probably the surest, has shown improvements in technique. More satisfactory anesthesia, blood replacement, and alteration in specific surgical procedures have led to bolder, more extensive and more effective operations. Dr. Brunschwig of New York, and Dr. Bricker of St. Louis, have been two prime advocates of these super-radical procedures. Their severe critic, Dr. Moyer, has recently swung around to stating that the long term review of these extensive and frequently mutilating procedures showed that they are of value. Dr. Urban reports a 62% 5-year survival for his super-radical mastectomy; questionably a 30% increase in cure rate. One must balance the worth of a procedure of great morbidity, mortality and mutilation for many against cure for a few. The Pope, in a prayer for the men carrying out research in cancer, brought out a viewpoint that I have strongly held: We must consider the whole patient, including his position in society. In some cases, these operations impose upon the patients such heavy permanent infirmities that he is reduced to total inactivity. In that phase, is life worthwhile for the patient, and would it not be better if we allow him to continue work with a palliative procedure as long as possible? I do not know the answer.

Radiation, the second of our two established methods of treating and curing cancer, has improved markedly in its effectiveness by technical advances, both in application and through increased power. At present, multi-million volt X-rays are being assessed as to their clinical usefulness. Here, too, we are

dealing with a two-edged sword, and the hematologists feel that there is no absolutely safe dose of irradiation. For example, the increase in leukemia among patients, even in those with limited therapy or for diagnosis alone, show a straight line relationship between the amount of exposure and incidence of the development of leukemia.

With the opening of the atomic era, radioactive isotopes came into use. Their over-all effectiveness has not been as great as we had anticipated, but they are an added source of help, and are presenting a much more diverse picture than was initially realized. For example, P-32 is being used in various blood dyscrasias, polythemia vera, leukemias, certain lymphomas. Radioiodine is used to treat some appropriate cases of thyroid cancer. Palliative treatment of generalized carcinoma of the abdominal or thoracic cavities is attained with radiogold, radioactive chromic phosphate, yttrium-90 and lutecium-177, these aiding in reducing fluid accumulation. Radioiodinated human serum albumin and radioarsenic are helpful to neurosurgeons in diagnosing and localizing brain tumors. Radiostrontium applicators are useful in treating benign growths of the sclera. P-32 has been found helpful in localizing intraorbital tumors. Radiogold is used in the interstitial treatment of prostatic cancer and in some bladder cancers. This radioactive isotope has been inserted into hollow threads and used to treat cancer of the cervix, as can be done with radioactive cesium. It is likely that destruction of the pituitary gland with implantation of radioactive yttrium-90 pellets may become a substitute for the rather precise surgical removal of this endocrine structure. It is significant that the cost of these radioactive isotopes has been reduced 20-25% by the U. S. Atomic Energy Commission very recently.

To shift to other efforts than the specific etiology and treatment, we have expressed repeatedly that a prime way of increasing the cure rate is early detection. Much research effort has been beamed to find a rapid and sure way of detecting cancer in the early stage. Possibly our greatest advance in recent years has been the development of the Papanicolaou stain. This is effective. It is effective in individual cases and for surveys as shown by the Memphis study for cancer detection of the cervix in women. 70,000 women were screened,

527 were positive, 321 were unsuspected but became evident by this cytological test.

In September of this year at Rochester, New York, Dr. Holmes of the University of Colorado Medical School announced progress in the detection of cancer using "Pulse-Echo Ultrasonic Techniques." The initial patterns appear promising, but the method is not available for general use.

Under present circumstances, our greatest opportunity for cutting down the cancer death rate, is by spreading cancer education more widely — possibly putting it into the curricula of secondary schools and colleges. It should be taught that personal responsibility is the best means of early cancer detection, and at present the most substantial hope for cure. For example, surgeons have a cancer death rate of 16/10,000; men in general have a cancer death rate of 24/10,000.

Education — lay and professional — with our present tools could and should alter our cure rates enormously. For example:

25% of gynecological malignancies are cured, 80% should be.

5% of lung cancer is cured, 50% should be.

35% of breast cancer is cured, 70% should be.

35% of ENT cancer is cured, 65% should be.

85% of skin cancer is cured, 95% should be.

But — education is not all. Robins, in a review of obvious skin and subcutaneous lesions, noted that physicians delayed longer than the laity. 66% of the M.D.s went six months or more before seeking treatment, while only 45% of the public went six months or more.

Frequently, we have been accused of scaring more people than we are curing with the cancer education program. The experience of the Yorkshire Consul in Great Britain, where they held 220 lectures to the public on cancer education, and then surveyed 5,740 people as to whether the education program should be continued, is illuminating. Did it increase their worry? Should the lectures be given? Did it diminish their worry? The results of the survey showed 99.1% in favor of continuing the education program. American surveys have been in the affirmative, but not so strikingly so.

In reviewing the research program of the last few years, one must consider that the adolescence of this program is past and with entering maturity, long-term commitments for research projects must become a reality. There

is a disturbing development in the cancer research program, a movement away from the nationally coordinated program to isolated projects. This is an error. It is the result of the demands of the varied divisions of the Cancer Society and is a fault that should not be pursued by any of them. Coordinated research is a necessity.

SUMMARY.

1. We are becoming cognizant of specific carcinogens and factors to avoid. I hope that we can eliminate most of these better than we have eliminated the cigarette.

2. Geography has only recently been noted as a factor in the incidence of cancer.

3. The need for greater education is evident, particularly until more specific treatment is available. Even with our present knowledge the cure rate could be improved greatly.

4. Surgery and radio-therapy along with the radioactive elements are making specific advances but are not likely to produce the ultimate answer.

5. The fields of chemotherapy and immunity are just opening. They seem extremely promising.

illuminating fashion. It is divided into four sections.

Part I discusses the diagnostic aspects from a clinical viewpoint, (Dr. Penfield) and then from the electroencephalographic and radiologic positions. Because of the difficulty in evaluating the patient with seizures, this section will be of great worth to most medical practitioners.

Part II presents the latest in treatment of the convulsive state. The medical aspects of this therapy as outlined by Dr. Thomas includes a discussion of all the drugs in current use, dosages, side-effects and cost per day's treatment. This information alone is well worth the price of the volume. Emotional and psychological aspects are also developed skillfully. Drs. Penfield and Steelman then present the techniques and results to be expected by treating selected cases surgically.

Part III is concerned with the educational problems to the epileptic patient. Various facets of these problems are explained by prominent educators of the handicapped. The technique of handling these patients in their everyday lives is information all practicing physicians should acquire.

Part IV discusses employment and rehabilitation problems of the patient with seizures. Each must be properly evaluated by qualified investigators before careers can be arranged. With such an analysis it is gratifying to learn that many of our seizure patients can take a normal role in our society.

Drs. Green and Steelman are to be complimented on compiling such a valuable reference work in the field of epilepsy. Its value to the internist, pediatrician and family physician will indeed be great.

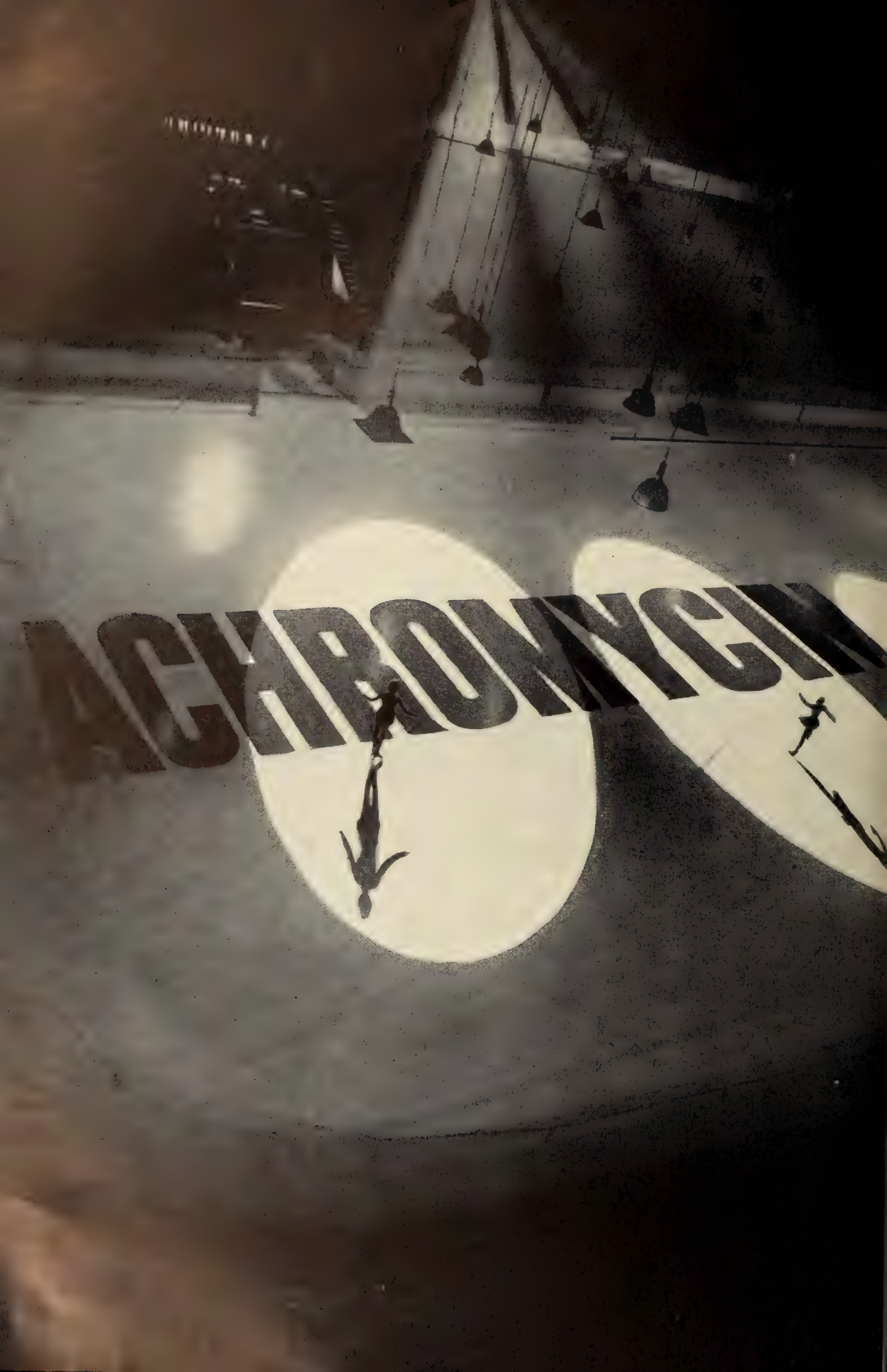
Book REVIEWS

EPILEPTIC SEIZURES, edited by John R. Green, M.D. and Harry F. Steelman, M.D., The Williams & Wilkins Company, Baltimore, 1956, \$5.00.

IN NOVEMBER, 1955 many of the outstanding authorities on epilepsy met in a three-day symposium in Phoenix to consolidate their thinking on this subject. Featured in this group was Dr. Wilder Penfield, the Director of the Montreal Neurological Institute and such authorities as Dr. Robert B. Aird of the University of California, Dr. Augustus S. Rose of U.C.L.A., Dr. John L. Otto of the University of Texas, Dr. Madison Thomas of the University of Utah, as well as Phoenix's own Drs. John Green, Harry Steelman and James Riordan.

The contributions of these and other experts in the field have been edited by Dr. Green and Dr. Steelman into a comprehensive volume that presents the seizure problem in a most





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*REG. U. S. PAT. OFF.

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1. Finland, M., *et al.*: *J.A.M.A.* 154:561 (Feb. 13) 1954.
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PHOENIX *Clinical* CLUB

The Case History in this discussion is selected from the Case Records of the Massachusetts General Hospital, and reprinted from the New England Journal of Medicine. The discussant under Differential Diagnosis is a member of the staff of the Massachusetts General Hospital. The other discussants are members of the Phoenix Clinical Club.

MASSACHUSETTS GENERAL HOSPITAL PRESENTATION OF CASE

FIRST admission. A fifty-one-year-old rubber-mill worker was admitted to the hospital because of dyspnea.

The patient had been in good health until four years previously, when he noted exertional dyspnea associated with rapid heart action. The dyspnea was progressive, and in the past year walking across the factory floor caused difficulty in breathing. For the two weeks before admission the dyspnea had been severe, especially during each of the past three nights, most of which he had spent at an open window gasping for each breath. He had attempted to do some carpentry work on the day of admission, but had had to stop. His physician gave him digitalis and advised hospitalization.

The patient had never had rheumatic fever, arthritis, skin eruption, febrile illness or venereal disease. He had never been told that he had heart disease. Twenty-five years before admission he had served with the Marines in China for five years.

Physical examination revealed a well developed, tachypneic man. The neck veins were markedly distended. The chest was clear to percussion. Moist rales were heard at both bases. The border of the heart extended to the anterior axillary line. The apical impulse was visible in the sixth intercostal space, 12 cm. from the midsternal line. The rhythm was regular. The pulmonic second sound was much louder than the aortic. There was a Grade 2 aortic diastolic blow, best heard along the left sternal border and a Grade 2 harsh aortic systolic murmur. A Grade 2 diastolic rumble with a presystolic crescendo and a Grade 2 systolic blow were heard at the apex. The

mitral first sound was accentuated and had a snapping quality. The abdomen was normal. The deep tendon reflexes were normal. There was + pitting edema of the ankles.

The temperature was 99.2° F., the pulse 80, and the respirations 24. The blood pressure was 140 systolic, 50 diastolic.

The urine showed no abnormal features. Examination of the blood revealed a hemoglobin of 13.0 gm. The white-cell count was 9600, with 86% neutrophils. The sodium potassium, chloride, nonprotein nitrogen and carbon dioxide combining power were all within normal limits. A stool examination was negative to the guaiac test. A sputum culture revealed abundant alpha-hemolytic streptococci, moderate growth of *Neisseria catarrhalis* and a few colonies of *Staphylococcus albus*. An electrocardiogram showed a normal sinus rhythm, a PR interval of 0.14 second, a GRS interval of 0.07 second and tall R waves in Leads V-5 and V-6. The ST segments were sagging in leads aVL, V-5 and V-6; the T waves were low and biphasic, and the P waves were broad and notched. A tracing taken on the next day revealed no significant changes. An X-ray film of the chest showed an enlarged heart, with enlargement of the left but not of the right ventricle. The cardiothoracic ratio was 16:30. There were moderate pulmonary congestion and ill defined areas of increased density over much of the right lung. Multiple large blebs were present in the right lung, and free fluid was noted in the right pleural cavity.

The patient was given oxygen by mask, 0.8 mg. of Cedilanid intravenously, 2 cc. of Mercurhydrin intramuscularly and 600,000 units of aqueous penicillin. During the next eleven days in the hospital he improved on bed rest, a low-salt diet, penicillin, digitoxin and Mercurhydrin. An X-ray film of the chest showed less congestion, but strands of increased density were still noted throughout both lungs. He was discharged very much improved on the eleventh hospital day.

Final admission (two weeks later because of severe dyspnea). His wife stated that he had been doing fairly well until three days pre-

viously, when he felt cold in the morning, and that evening he felt flushed. The following morning he began to vomit after breakfast, and this continued for the next two days. Two days before admission he had a shaking chill followed by sweating. His family physician discontinued digitalis and potassium iodide and began treatment with erythromycin. He continued to be severely dyspneic, with retching and anorexia on the day before admission and that night slept very poorly. On the day of admission he had paroxysms of coughing and retching.

Physical examination revealed an acutely and desperately ill, dyspneic, cyanotic man who was unable to speak more than a few words because of severe dyspnea. The pupils were small, round and equal and reacted well to accommodation but not to light. The scleras were injected but not icteric. The neck veins were not distended. The lungs were clear to percussion, and an occasional distant wheeze was heard. There was a Grade 2 to-and-fro murmur at the apex that could not be delineated into systolic and diastolic murmurs. No murmurs were heard at the base. The pulmonic second sound was louder than the aortic. The abdomen was normal.

The temperature was 103° F., the pulse 120, and the respirations 40. The blood pressure was 110 systolic, 60 diastolic.

The urine gave a + test for albumin; the sediment contained many granular casts per high-power field but no white cells or red cells. Examination of the blood revealed a hemoglobin of 13 gm. per 100 cc. and a white-cell count of 16,800. The sodium was 120 milliequiv., the potassium 6.5 milliequiv., the chloride 92 milliequiv., and the carbon dioxide 17 milliequiv. per liter. The blood pH was 7.39. An X-ray film of the chest showed patchy areas of increased density throughout both lung fields, especially in both upper lobes. The emphysematous blebs were more apparent in contrast to adjacent consolidation. The heart shadow was unchanged.

The patient was immediately given oxygen under positive pressure and Digalin. He preferred lying back at a 20° angle to sitting up. Suddenly, about 10 hours after admission, he became more dyspneic and called out that he could not breathe. The lungs were full of coarse rales. The pulse was regular at a rate

of about 150. He was given 0.4 mg. of Cedilanid intravenously, tourniquets were applied, and he was placed in a sitting position. He died within a few minutes. Terminally, the neck veins, which had previously been flat, became distended.

Dr. Palmer Dysart:

Although no serology is noted, Argyle-Robertson pupils are described at this patient's second admission. Even though deep tendon reflexes had been recorded as normal at the first admission, it is probable that the primary aortic valvular disease was the result of syphilitic infection. And, I would deduce, even though this patient had been employed as a rubber-mill worker, he may not have been sold on the use of rubber products himself. But syphilitic aortitis is a late sequel of the disease, and exposure probably occurred twenty-five years before while he served with the Marine Corps in China. Pulmonary fibrosis and emphysema were present, and scattered patchy densities were seen on X-ray. A syphilitic pneumonitis may have been present, but another cause based upon his employment as a rubber-mill worker may be present, for many of the chemicals used in the rubber industry are pulmonary irritants.

In 1839 Charles Goodyear discovered hot vulcanization of rubber. This is a chemical combination of sulfur with rubber by which the physical properties are changed to increase its strength and elasticity and improve its resistance to changes in temperature and ageing. Crude rubber, containing natural impurities can be vulcanized with sulfur alone, while vulcanization of highly purified rubber is promoted by artificial accelerators and activators of these accelerators. Ageing of rubber is reduced by antioxidants; molding is facilitated by plasticizers; and increased wear resistance results from adding carbon black.

Charles Goodyear patented the first artificial accelerator, basic lead carbonate. The last twenty years have seen a tremendous increase in complex organic compounding ingredients, and new compounds are being rapidly added to the list. Irritation or sensitivity rarely occurs from crude dry rubber, but many of these additives are systemic toxins, irritants to the skin, respiratory tract, nervous system, gastrointestinal tract, cardiovascular-renal system and hemopoietic system, or skin sensitizers. The

effect varies with the type of substance, its concentration, mode of introduction into the system, and the duration of exposure. For inhaled toxins it has been found that in sublethal dosage, damage to the respiratory tract and the resulting inflammatory reaction is influenced more by the duration of exposure than by the concentration of the toxic agent. These conclusions are based upon extensive and detailed experimental work. Other work has shown that inhalation of sublethal doses of such toxins produces varying degrees of bronchiolitis fibrosa obliterations.

Incidentally, one of the powerful accelerators, tetraethylthiuram disulfide, because of nausea and "shakes" experienced following drinking bouts by those exposed to this compound, was named "antabuse" by Danish physicians who began using it in the treatment of chronic alcoholism.

Besides the additives used in the manufacture of rubber which may produce tissue damage, there is regular exposure of those employed in this industry to plenty of talc dust used to powder rubber products to overcome tackiness. Talc granulomata in the peritoneal cavity resulting from contamination with talc glove powder introduced during surgery is recognized, and has resulted in its elimination for this use. Pneumoconiosis from inhaled talc producing a picture similar to asbestosis has been described occurring in rubber workers. Earlier, it had been doubted that talc could do this, but definite diffuse pulmonary fibrosis with scattered small nodules, within which talc crystals occur, has been observed and recorded.

In spite of dissimilarities, it is tempting to consider that this patient might have been suffering from a condition which has been described only recently. This is functioning carcinoid, a disease complex which is similar in many respects to the conditions presented by this case, although typically, cardiac involvement in this condition is limited to pulmonary and tricuspid valve lesions, but left heart involvement is suspected to be present more frequently than has been observed.

About three years ago, a pharmacodynamic substance, 5-hydroxytryptamine was isolated from metastatic carcinoid tumors and was recognized as identical to enteramine, a substance produced by the chromaffin cells of the intestinal tract, and serotonin, a substance previously found

in the blood which had potent pharmacologic effects on the smooth muscle of the intestine, bronchi, and blood vessels. In 1954, studies in the laboratories of the National Heart Institute showed that serotonin was derived from the essential amino acid, tryptophan, and that an end product of this metabolic process was 5-hydroxyindoleacetic acid which is excreted in the urine. Patients having the clinical features of a functioning carcinoid tumor have an abnormal amount of serotonin in their circulating blood, excrete a large amount of 5-hydroxyindoleacetic acid in their urine, and present clinically varying degrees of cutaneous vasomotor phenomena of flushing and cyanosis associated frequently with frank asthmatic attacks, right heart valvular disease producing progressive exertional dyspnea and fatigability, hepatomegaly, and evidence of low grade malignancy of the intestinal tract.

If, as has been implied, repeatability is the only quality which entitles a datum to be promoted to the rank of a fact, the failure of a disease entity to produce the same pathologic complex every time must vitiate the observations that it has ever done it at all. But, the incidence of a given set of conditions in an individual cannot be predicated upon their statistical occurrence in a substantial series. Incidence by chance occurs in a material or mechanical frame of reference.

Facts within an explanatory system are fetishes whose value as embodiments of absolute truth it would be sacrilege to question. Repeatability is one of these fact-fetishes, and is rationalized, due to the complexity of things, that it is the data from which facts are made that are not repeatable, and mere data can be disregarded.

My diagnosis is that great imitator, Syphilis, and pulmonary fibrosis and emphysema.

DIFFERENTIAL DIAGNOSIS

Dr. Gordon S. Myers: First, I shall ask Dr. Hanelin to show the X-ray films because I think that they may help me discuss the problem intelligently.

Dr. Joseph Hanelin: The initial film indicates a great deal of change in the lung fields that is seen on all the subsequent films and is better demonstrated after the initial congestion has cleared. The heart is definitely enlarged, and I shall say more about its configuration in the later examinations. There are

large zones of density in both lungs consistent with pulmonary edema. When the congestive changes have largely cleared, about four days later, there are huge blebs visible in the lungs, particularly on the right side. There are scattered strand-like densities in both lung fields and also a fair number of small nodular lesions. These changes are consistent with chronic pulmonary disease. What the shape of the heart might indicate about individual chamber enlargement is extremely difficult or impossible to say. I suspect that in addition to hypertrophy of the left ventricle there may also be considerable enlargement of the right. This is suggested by the right anterior oblique view, in which the heart shows anterior prominence. Two weeks later, a day or so before death, there are again large blotches or density in both lungs that probably represent edema.

Dr. Myers: Do you see any calcification in the ascending aorta?

Dr. Hanelin: No, I do not.

Dr. Myers: Is there any enlargement of the left atrium?

Dr. Hanelin: There may be slight enlargement of the left atrium.

Dr. Myers: Do you see any sign of intracardiac calcification?

Dr. Hanelin: No; I cannot see any.

Dr. Myers: Do you think any of the lesions in the lung are consistent with pulmonary emboli?

Dr. Hanelin: I cannot be certain of any areas of infarction. One might wonder in the last film whether some of the densities were due to infarcts.

Dr. Myers: Could some of the strand like areas of fibrosis represent old infarcts?

Dr. Hanelin: That is possible, but the picture is not too characteristic.

Dr. Myers: After the congestion has cleared up, can you see any areas of emphysema and fibrosis?

Dr. Hanelin: There is a great deal of emphysema and many areas of fibrosis.

Dr. Myers: The initial history and physical examination are quite consistent with rheumatic heart disease, aortic and mitral disease and congestive heart failure. This patient had progressive dyspnea, beginning at about the age of forty-seven. The fact that he had no past history of rheumatic fever or rheumatic heart disease is not too disturbing because such a

history is frequently absent in patients with proved rheumatic heart disease. Initially, when he came into the hospital he had dyspnea, distention of the neck veins, rales at the lung bases, cardiac enlargement, accentuation of the pulmonic second and mitral first sounds and double murmurs at the apex and aortic areas. The blood pressure of 140 systolic, 50 diastolic, indicates an important degree of aortic regurgitation, and the electrocardiogram points decisively to hypertrophy of the left ventricle. Evidently, at the time of the first admission, he was thought to have congestive heart failure and probably some pulmonary infection since he was given penicillin. In addition he was later given potassium iodide so that the physicians who took care of him must have thought he had chronic pulmonary disease.

It must have been surprising at the time of the second admission, when he was cyanotic and extremely dyspneic, with fever and a rapid pulse, to find no definite evidence of congestive heart failure on physical examination: the neck veins were said to be normal, and there were no rales in the lungs. Nevertheless, the X-ray film of the chest taken at that time indicated a considerable degree of congestion in the lungs. It is not too uncommon to see clear evidence of marked pulmonary congestion in X-ray films and to hear very little or nothing by auscultation.

One wonders about the change of the auscultatory findings at the time of second admission. Apparently, no murmurs were heard at the base, and there was some kind of to-and-fro-murmur, which was vaguely described, that could not be delineated into a definite systolic and diastolic murmur. Perhaps this was a pleuropericardial friction rub. The observation that the murmurs were not well heard at that time could be explained by the fact that he was so desperately ill, with a very rapid heart rate. Under such circumstances, murmurs that have previously been quite obvious disappear or become very difficult to detect.

The white-cell count had risen to 16,800 which makes one think of infection or infarction. The fall in the sodium chloride could have been due to the low-salt diet, diuretics and vomiting, but the fall in the carbon dioxide and rise in the potassium make one wonder about renal impairment. If I knew the specific gravity of the urine and nonprotein nitrogen,

it might be of some help.

Dr. Benjamin Castleman: There was not enough urine on which to test the specific gravity during the final admission. The patient was in for only two days so there was enough time to determine the extraordinary electrolyte values but not the nonprotein nitrogen.

Dr. Myers: It occurred to me that he could have had emboli to the kidneys, with multiple infarcts, but there was no clear evidence of this, in view of the facts that he did not complain of pain, examination of the abdomen was negative and the urine contained no red cells. I suspect that the specific gravity was high and that this picture represented prerenal azotemia, with further electrolyte imbalance due to previous therapy and vomiting.

One must always have a high index of suspicion in discussing cases in these conferences, but I can be reasonably sure that the patient had aortic regurgitation: there was a perfectly reasonable murmur for it, the electrocardiogram indicated left-ventricle hypertrophy and the pulse pressure was wide. Was the aortic regurgitation due to rheumatic heart disease or some other defect? Were the Wassermann and Hinton tests negative?

Dr. Castleman: None were done.

Dr. Myers: So we do not have a serologic report on this patient. However, there was no previous history of syphilis, there was no calcification of the ascending aorta, and the reflexes were said to be normal. The only confusing detail is the fact that one physician noted that the pupils were fixed to light and reacted to accommodation. I do not believe that this patient had aortic regurgitation on the basis of syphilitic heart disease. Although one can have an Austin-Flint murmur in the absence of mitral disease, giving rise to a presystolic murmur at the apex, the fact that he had a very loud mitral first sound and broad, notched P waves in the electrocardiogram leads me to believe mitral disease was also present.

Dr. Castleman: Why does the electrocardiogram lead you to suggest mitral disease?

Dr. Myers: Ordinarily, patients who have aortic regurgitation and hypertrophy of the left ventricle, with or without dilation of the left atrium, are not so likely to show broad, notched P waves, usually indicating some involvement of the atrium, often by coronary-artery disease or rheumatic heart disease.

Dr. Castleman: That is due to the involvement of the atrium itself, a myocarditis?

Dr. Myers: Presumably, the atrium itself is the site of myocarditis or fibrosis. This does not exclude the possibility that the patient had only aortic regurgitation, but that seems to me considerably less likely.

The next question is, What was going on in the lung? The X-ray films showed emphysematous blebs and areas of increased fibrosis. The patient was a rubber-mill worker; Dr. Harriet L. Hardy tells me that such workers are exposed to talc and may therefore be subject to pulmonary fibrosis, which may ultimately cause cor pulmonale. Certainly, there is no definite evidence of cor pulmonale here; if there was any it must have been a very minor part of the picture.

Could there have been pulmonary emboli? I did not have the advantage of seeing the X-ray films when I first read the protocol, and I must say that I was suspicious of multiple pulmonary emboli. To be sure, pleural pain and hemoptysis were not present, but they are not invariable symptoms of pulmonary infarcts. Pulmonary emboli occur in roughly 50 per cent of patients with rheumatic heart disease and mitral stenosis who die in congestive heart failure. That makes the possibility of this complication a very real one. Nothing was said about the legs, but many patients with phlebothrombosis show nothing in the legs. Furthermore, the electrocardiogram demonstrates changes that point to pulmonary emboli in only about 10 per cent of cases. Pulmonary emboli might account for some of the X-ray findings, the clinical course of the patient with increasing congestive heart failure and the fever and leukocytosis shortly before death.

It is true, of course, that chills and abdominal symptoms, with nausea and vomiting, are quite uncommon with infarcts; therefore, bronchopneumonia may have complicated the picture. Other unlikely complications, which we do not have time to discuss in detail, I shall just mention: active rheumatic fever, subacute bacterial endocarditis complicating myocardial infarction, ball-valve thrombus in the left atrium and mesenteric or renal infarcts. None of these can I diagnose on the basis of the evidence at hand.

I shall have to conclude that this patient had rheumatic heart disease, predominantly of

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SEARLE

the aortic valve, with regurgitation and stenosis, but probably with some mitral stenosis and regurgitation as well, and that he had chronic pulmonary disease. Possibly the chronic pulmonary fibrosis was on the basis of the industrial exposure to talc. I think it likely that he had pulmonary emboli, at least at the time of the final illness, with or without bronchopneumonia.

A Physician: Was there any enlargement of the left atrium?

Dr. Hanelin: The evidence for it is slight. I do not think it is a large chamber. There is a slight posterior bulge of the esophagus at the level of the atrium that might result from some increase in its size. It is not of the size usually associated with mitral stenosis. In the presence of failure of the left ventricle there may be some increase in the size of the atrium.

Dr. Lewis Kane: It interests me that in the last admission he had a carbon dioxide of 17 milliequiv. per liter and was given oxygen, and that the terminal episode occurred shortly thereafter.

Dr. Castleman: You mean that there may have been some oxygen intoxication?

Dr. Myers: I think it is worth pointing out that patients with pulmonary disease who get into trouble with oxygen inhalation do so because of a rising carbon dioxide tension. Usually, they are in acidosis with an elevated carbon dioxide, and become more or less stuporous and then comatose and finally may die. That was not the picture here. The patient continued to be very dyspneic and finally died with a very severe episode of shortness of breath. I do not believe that was the mechanism of his death.

Dr. Kane: The carbon dioxide serves as a stimulus for respiration. When the oxygen is administered and the carbon dioxide is decreased, the stimulus would be decreased accordingly.

Dr. Myers: That apparently did not occur here. This patient was breathing very rapidly up to the time of death.

CLINICAL DIAGNOSES

Rheumatic heart disease, with aortic and mitral regurgitation and stenosis. Chronic pulmonary fibrosis and emphysema.

DR. GORDON S. MYERS' DIAGNOSES

Rheumatic heart disease, with aortic and mitral stenosis and regurgitation.

Chronic pulmonary fibrosis.

Pulmonary emboli, ?with bronchopneumonia.

ANATOMICAL DIAGNOSES

Syphilitic heart disease with aortitis, aneurysmal dilatation of ascending aorta and narrowing of right coronary ostium.

Pulmonary fibrosis, bilateral.

Pulmonary emphysema, bilateral.

Hydrothorax, bilateral.

Pulmonary edema.

Bronchopneumonia.

PATHOLOGICAL DISCUSSION

Dr. Castleman: At the time of autopsy the infiltration of the lungs proved to be pulmonary edema and bronchopneumonia. We were unable to find any infarcts. We did find pleural fluid, — 800 cc. on the left and 500 cc. on the right, — which seems surprising, for the costophrenic angles look fairly sharp on the X-ray films.

Dr. Hanelin: Do you know the interval between the date of the film and death?

Dr. J. R. Petranek: The last films were taken four hours before death.

Dr. Hanelin: I should think that this much fluid would have been shown; most of it must have developed after the film was taken.

Dr. Castleman: The underlying disease in the lung was very severe pulmonary emphysema, with huge blebs and a great deal of fibrosis. Certainly, the pulmonary reserve was very small so that the patient was likely to go into heart failure very easily. The heart was large weighing almost 500 gm.; most of the increase was of the left chamber. The right ventricle measured only 4 mm., which, with that degree of emphysema and fibrosis, does not represent very much enlargement; there was certainly not a great deal of right-sided heart failure. The valve lesion was entirely aortic and showed as classic a picture of syphilitic aortitis as we ever see. In retrospect, Dr. Hanelin, is this ascending aorta on the X-ray film a little wide?

Dr. Hanelin: Not particularly so.

Dr. Castleman: It was.

Dr. Hanelin: It does not look it.

Dr. Castleman: There was a definite dilatation of the ascending aorta, with the classic tree barking and wrinkling of the intima but without calcification. The aortic cusps were separated at the commissures up to 2 and 3 mm. in places, allowing for a free aortic regurgitation, which was proved by perfusion of the heart post mortem by Dr. Fairfield Good-

dale, Jr. Further confirmation was a small area of connective tissue in the form of a cusp on the endocardium of the ventricle below the valve — a teleologic attempt to form a fourth cusp to prevent further regurgitation! There was no disease of the mitral valve so that I think the murmur was an Austin-Flint one.

It is unfortunate that a blood Hinton or Wassermann test had not been done. Since we now see so little syphilis we often find this omission.

Dr. Myers: Was there anything abnormal in the abdomen?

Dr. Castleman: No.

Microscopical examination of the ascending aorta revealed some intimal sclerosis with a little calcification, and the medial degeneration and adventitial cellular infiltration characteristic of syphilis.

MEETING NOTICE

THE Ninth Annual Mid-Winter Radiological Conference, sponsored by the Los Angeles Radiological Society, will be held at the Biltmore Hotel, Los Angeles, California, Saturday and Sunday, February 23 and 24, 1957.

An outstanding program of pertinent interest has been arranged, and the guest speakers will be Dr. John Caffey, New York; Doctor John Frimann-Dahl of Ulleval Hospital, Oslo, Norway; Doctor Merrill C. Sosman, Boston; and Professor Brian W. Windeyer, University of London and Middlesex Hospital, London, England.

The conference fee of \$20.00 includes two luncheon meetings featuring questions and answers. A banquet (\$7.50 per plate), preceded by cocktails will be held Saturday evening. Reservations may be made through Dr. Louis J. Bonann, 1245 Glendon Avenue, Los Angeles 24, California.

Courtesy cards will be available to residents in radiology and radiologists in the Armed Forces by advance registration, with reduced tariff for the luncheons and banquet. Hotel reservations should be made promptly through the Convention Manager, Biltmore Hotel, Los Angeles, Calif.

CARE OF MILITARY PERSONNEL AWOL

"TO THE Editor: In a number of cases phy-

sicians and hospitals have accepted for emergency treatment members of the Army who were in a status of absent without official leave (AWOL). Upon subsequent submission of vouchers for payment, the physician or hospital has had to be informed that current regulations preclude the payment from public funds for medical treatment rendered military personnel in such a status.

Upon the acceptance by a hospital or physician of a member of the military service (Army, Navy or Air Force), immediate report should be made to the nearest military facility of the illness or injury. This procedure should be accomplished whether the person is absent with or without official leave in order that his parent organization may be informed of his continued absence by reason of illness or injury. If he is in an AWOL status, the report of his location and illness or injury constitutes a return to military control and, in effect, **terminates his AWOL status**. The Government subsequently becomes responsible for payment of his medical care by civilian agencies. These statements apply to practically every situation except unusual cases in which a person is engaged in a criminal act or when unauthorized medical care is furnished for a condition that is not an emergency. Also, the assumption must be made that one service will act for the other in the matter of relaying the information to the parent organization.

Statements of account for payment may be forwarded to the commanding officer, who will transmit them to their proper designation. The processing of an account involves a matter of weeks, but payment is certain when emergency medical care is rendered a bona fide member of the military service who is not AWOL and who is not engaged in a criminal act. . . ."

It cannot be overly stressed that early reporting of the individual to the proper military authorities is of the utmost importance.

Any inquiries concerning the subject discussed may be referred to my office, addressed directly to the Surgeon, Headquarters Six Army, Presidio of San Francisco, California.

Sincerely,

HENRY W. DAINE
Colonel, MC
Army Surgeon

THE *President's* PAGE

TO MY COLLEAGUES:

On Sunday, November 19, 1956, at Tucson, Arizona, a contract was signed by your officers to make operative in Arizona the Medicare Program, authorized by Public Law 569 of the 84th Congress of the United States. The Program went into effect at 12:01 A.M., December 7, 1956.

You will soon receive copies of the fee schedule, which will explain the benefits provided to eligible dependents, and the charges for each procedure. Please note carefully that provision is not made for usual office procedures for out-patient care, other than repair of lacerations or treatment of fractures not requiring hospital confinement. Specifically excluded from the Medicare Program are: (1) Chronic diseases and domiciliary cases; (2) Nervous and mental disorders except for diagnostic purposes; (3) "Elective" procedures; (4) Treatment normally considered to be out-patient care; (5) Prosthetic devices, hearing aids, orthopaedic footwear, etc.; (6) Non-emergency ambulance service; (7) Routine home calls. The Council of the Arizona Medical Association feels that the fee schedule is fair and reasonable and represents the average charges for these services in this State. Your Medicare and Medical Economics Committees with the cooperation of Arizona Blue Shield spent many hours in formulating and preparing this schedule of charges, — and our thanks go to the members of these groups.

On November 12, 1956, representatives of your Association flew to Washington, D. C. They were: Doctor Frank W. Edel, Chairman, and Doctor Paul B. Jarrett, Member of the Medicare Committee; Edward Jacobson, Attorney; Robert Carpenter, Executive Secretary of the Arizona Medical Association, Inc; L. Donald Lau, Executive Director of Arizona Blue Shield; and your President. November 13th was spent in conference with C. Joseph Stetler, Director of the Department of Law of the American Medical Association. On November 14th your representatives met with the Department of the Army negotiating team representing the Department of Defense and discussed the fee schedule and terms of the contract. Matters of basic principles and ethics in safeguarding good medical practice were carefully and studiously discussed.

Article II of the contract provides that: "A physician shall have the right to decline to participate under this program or to refuse any individual case without stating a reason therefor, and dependents shall have the privilege of choosing any physician who agrees to provide medical services in accordance with the schedule of allowance (Fee Schedule)." The contract is binding until June 30, 1957, and is then open to renegotiation.

The Arizona Blue Shield Medical Service is designated to serve as the fiscal agent. You will soon receive the claim forms for presentation to the Arizona Blue Shield for payment for services rendered.

The Council has designated the members (of the Association) now serving on the Professional Committee of Arizona Blue Shield, with the addition of Doctor Frank W. Edel, to represent this Association as a board of arbitrators to mediate any disputes or misunderstandings that may arise in the administration of this Medicare Plan.

In conclusion there are two items which should be clarified, i.e.:

(1) The Medicare Program is a plan of the Federal Government to be administered by the Department of Defense through the Department of the Army under Public Law 569 and should be in no way associated with our current Arizona Blue Shield Plan.

(2) This Medicare Plan presently provides ONLY for the eligible, lawful spouse and dependent children of personnel of the uniformed services.

Under this plan we are working with — not for — the Department of Defense in providing good medical care to the dependents of the men in uniform who serve us.

I take this opportunity to express my sincere gratitude to Doctor Frank W. Edel, Doctor Paul B. Jarrett, Mr. Edward Jacobson, Mr. Robert Carpenter, Mr. L. Donald Lau, and to all of the others who helped in these negotiations for their wise counsel and their unselfish contribution of their time and energy.

Cordially,
THE ARIZONA MEDICAL ASSOCIATION, INC.
A. I. Podolsky, M.D.
President

Editorial

ARIZONA MEDICINE

Journal of

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CONTRIBUTORS

The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
5. Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.
6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.
7. Exclusive Publication—Articles are accepted for publication on condition that they are contributed solely to this Journal. Ordinarily contributors will be notified within 60 days if a manuscript is accepted for publication. Every effort will be made to return unused manuscripts.
8. Illustrations — Ordinarily publication of 2 or 3 illustrations accompanying an article will be paid for by Arizona Medicine. Any number beyond this will have to be paid for by the author.
9. Reprints — Reprints must be paid for by the author at established standard rates.
- The Editor is always ready, willing, and happy to help in any way possible.

PHENOTHIAZINE

OLD DRUGS like old soliders never die, they just come back with new names. Some years ago there was a drug called Thiodiphenylamine. It was used in humans as a urinary antibacterial and anthelmintic, but it was abandoned because of its toxicity. So for a few decades it fell into obscurity. Then it was revived some years back by veterinary physicians under the name of Phenothiazine. In animals it was and is used as an anthelmintic in doses of ¼ to ½ grain per pound of animal weight, or about 200 to 300 grains to a half ton animal. Now if you turn to your pharmacology books, you can find no mention of these agents. In the latest G. & G. nothing. In Drill's huge volume there is one sentence. On page 60/4 Drill states phenothiazine is used as a veterinary vermifuge, its use in man, however is unsatisfactory. This is from books little more than a year old. A glance at page 197 of the latest Epitome of U. S. P. and N. F. shows Phenothiazine listed with its old name also. Here is what is stated. "Apparently admitted to the N. F. for its use in veterinary medicine . . . but has been abandoned because of toxicity." So what does all this mean? Bear with me and we shall soon find out.

A few years ago there came out of France and Switzerland a "new drug" that made front pages in the artificial hibernation flourish. About the same time, there came a new antihistaminic and anthelmintic. This "new drug" was called by various names and finally emerged as Promethazine. Sounds familiar, doesn't it? Then came "an improvement" in the form of chlorpromazine. Now you know what it is. Well a still further "improvement" was the recent release of promazine. You want the trade names? Why it's Phenergan, Thorazine, and Sparine. But what are they? Pick up a sample and look at the small print under the name promethazine, chlorpromazine, and promaizne. They are none other than new names for our old friend phenothiazine, a three ring compound with a nitrogen and a sulfur atom in the middle ring. Only the side chains differ very slightly, or not at all as in the case of Thorazine which has the

halogen in the third ring. So we came back to the old thiodiphenylamine or phenothiazine. Wyeth is honest enough to admit Sparine and Phenergan are phenothiazines. Others, and there are more than one other now, in the field have tried to obscure the origin of these compounds by using only the promazine nomenclature.

New phenothiazine compounds have been formed. Actually several hundred of these "new" compounds are being screened for the happy pill. When it was for worms, phenothiazine was "for the birds." Now that mood affecting is the vogue, we can anticipate being bombarded with numerous glowing reports. However, we must exercise a bit of caution. What was once abandoned as too toxic is not going to lose an iota of its harmfulness just because it has a new name.

Robert J. Antos,
Guest Editor

FEE SPLITTING

THE COMPLAINT registered by many of the physicians of the State of Arizona at the last Delegates Meeting in Chandler against the method of Blue Shield's payment of assistant surgeon's fees as "out and out fee splitting" was substantiated by Dr. Paul R. Hawley of the American College of Surgeons at the recent San Francisco meeting. However, in contrast to his complaint, Arizona Blue Shield is to be commended in promptly attempting to correct this error, once it was brought to the attention of the administrative unit.

However, is the contemplated correction satisfactory and adequate? Is "fee splitting" avoided? Is the interest of the patient adequately protected? Or, are referrals encouraged to the man who will agree to use the referring physician even if house staff assistance is available? The present decision would not seem to discourage fee splitting. It seems to be a compromise, an effort to satisfy the surgeon who objects to a cut being made into his fee, and not a step to block "fee splitting."

"Fee splitting" has not proved to be a problem in this section of the country to date. However, known approaches have been made within

recent months. It would seem advisable to encourage the Arizona Chapter of the American Academy of General Practice and the Arizona Chapter of the American College of Surgeons to take steps that no roots are planted that would permit "fee splitting" in any form.

New York Medical Society Votes Two To One Against Mandatory A. M. A. Membership

In a recent state-wide referendum poll by the medical society of the State of New York, its members voted two to one against making membership in the A. M. A. mandatory along with membership in county and state society.

In commenting on the above it is my personal opinion that the advantages of being a member of the American Medical Association are many. No one can deny the many benefits to medical education, the level of medical practice, etc. that has resulted from the American Medical Association. One who is unwilling to support the American Medical Association with his membership is parasitic in that the benefits are desired, recognized, but not wished to be supported financially. Much of the resistance to mandatory membership might be ascribed to the political expression of the American Medical Association. It is obvious in America today that organized medicine must have its voice. It is equally apparent that the opinion expressed cannot be tailored to each person's individual desire.

E.E.Y.

LETTERS TO THE EDITOR AGAINST COMPULSION

RECENTLY, in a state-wide referendum, members of the Medical Society of the State of New York voted two to one against making AMA membership mandatory along with membership in the state and county societies.

Congratulations, New York!

Few things can be worse than compulsion. Certainly the strong tendency toward compulsion and bureaucracy which we have all ob-

served in the medical profession in recent years is to be resisted at every turn. The argument that increased AMA membership of state members will accordingly increase the number of delegates to which the state is entitled, is indeed weak. Principle certainly must stand above expediency.

Most doctors are happy to support the AMA in most of its activities — but not all.

Most doctors are happy to support the State Medical Society in most of its activities — but not all.

Most doctors are happy to support the County Medical Society in most of its activities — but not all.

Most doctors are happy to belong to the AMA, the State Society, and the County Society.

But doctors of medicine are graduates of a school of higher education, are qualified to practice their profession, and are licensed by the State to conduct such a practice. They are certainly qualified to determine for themselves to which organizations they wish to belong.

Are you listening, Arizona?

Louis G. Jekel, M.D.

1957 ANNUAL MEETING

INTRODUCING Raymond R. Lanier, M.D., Professor of Radiology, University of Colorado School of Medicine.

Doctor Lanier was born in Louisville, Kentucky on July 24, 1914. In June, 1935 he received his Bachelor of Arts degree from the University of Richmond, Virginia, took post-graduate work in Zoology at Duke University, in anatomy and physical anthropology at Washington University, receiving his Doctor of Philosophy degree in June, 1939. He received his doctor of medicine degree from Washington University School of Medicine in September, 1944. Doctor Lanier's internship and residency were served at the University of Chicago Clinics from 1944 to 1948, covering medicine, surgery, and radiology. He was certified by the American Board of Radiology in June, 1949.

Doctor Lanier served as an instructor in gross anatomy at Washington University School of Medicine from 1937 to 1942; as an instructor in roentgenology at the University of Chicago Clinics from March 1948 to December 1948; and as Assistant Professor of Roentgenology at the University of Chicago Clinics from January



Raymond R. Lanier, M.D.

1949 to June 1950. He received his appointment as Professor of Radiology at the University of Colorado School of Medicine in July 1950. He is a member of many medical societies and honor societies.

ANNUAL HANDICAP GOLF TOURNAMENT

DOCTOR Paul J. Slosser of Yuma has been appointed chairman of the Annual Handicap Golf Tournament Committee, who, with his assistants, Doctor G. Calvin Williamson and Doctor Robert A. Stratton, will arrange for the Tournament scheduled to be held Saturday, April 13, 1957. The membership will be informed of the details at a later date.

MEDICAL HISTORY OF ARIZONA

MUCH OF THE record of the past is lost because the man who knows the story thinks someone else could "write it better". Please send in your tale for Arizona's History of Medicine.

HOWELL RANDOLPH, M.D.
Historian

The History of Medicine in Arizona

JOHN CHARLES HANDY, M.D.

(Tucson, 1871-1891)

By W. V. Whitmore

OF THE five men already mentioned Dr. Handy was the pioneer. He was born in Newark, New Jersey, October 20, 1844. When he was only 9 years of age, his family moved to California. He was graduated from Cooper Medical College, San Francisco, in 1863, at the age of 19 years. He was very soon appointed Surgeon in the United States Army, being stationed first at Angel Island, California, and later at two other points in that state. He came to Arizona in 1866. Early residents of Tucson speak of meeting him at San Antonio, Texas, and state that he went from there to some Army Post in New Mexico. Certain it is that he was at Forts Apache, Thomas and Grant, Arizona, from 1869 to 1871. He resigned from Fort Apache in October 1871. He was thus one of the early pioneer physicians of Arizona — as well as the first medical man to remain in Tucson long enough to leave a lasting imprint upon the community.

REASON FOR LOCATING IN TUCSON

About 35 years ago Mr. Samuel Hughes — “the father of Tucson” related to me the circumstances under which Dr. Handy became a resident of Tucson. Mr. Hughes came here in 1858 — at death’s door with hemorrhages from the lungs. But McClintock’s History of Arizona (1916) lists him at that date as the “oldest, living, white pioneer in Arizona”. After resigning from Fort Grant Dr. Handy came to Tucson primarily to place three orphan Indian girls in suitable families here. While he was here Mr. Hughes became ill and Dr. Handy was summoned. Upon learning that the Doctor’s plans for the future were quite indefinite, Mr. Hughes asked him how much of a guarantee would be required to persuade him to remain in Tucson. Dr. Handy replied that if he had an annual income of \$2,500 assured, he would be willing to take his chances here. Mr. Hughes did not wait to get well but, donning his clothes, went out upon the street. In a short time he returned with a list of more than 25 names of heads of families, who agreed to pay Dr. Handy \$100 a year for medical services.



Dr. John Charles Handy

PROFESSIONAL ABILITY

Dr. Handy proved to be a distinctly high-class man, both as a physician and surgeon. His natural ability — shown by his graduating when only 19 years old — and his wide professional experience had given eminent skill and excellent judgment. He seems to have been both scientific and practical — unusually well fitted to meet the primitive conditions of that date, and he at once won the high respect and utmost confidence of the people here.

County Physician — During most of his 20 years here he held the position of County Physician. Never have the poor of Pima County had more attentive and skillful service than during those years.

City Physician and Health Officer — The first City Directory of Tucson (1881) lists Dr. Handy in the dual role of City Physician and Health Officer. Epidemics — especially of smallpox — were much more frequent in those primitive days. In epidemics or threatened epidemics all eyes were turned to Dr. Handy and such was their confidence in him that sighs of relief were heard on all sides when it was known that he was in charge.

Division Surgeon of Southern Pacific — From the coming of the Railroad (1880) Dr. Handy

was Division Surgeon and he made a reputation for himself by the remarkable results obtained in this important field. Officers and employees alike placed in him the utmost confidence and held him in the highest esteem.

NON-PROFESSIONAL ACTIVITIES

County Supervisor, President, Arizona Pioneers, Charter Member of Masons, Knights of Pythias, Legion of Honor. First Chancellor of the U. of A. (1886).

Unusual Service — Primitive conditions practically required this. At that time trained nurses here were unknown. So certain phases of work had to be done by the physician — if they were done at all. In some families there was no one who could be trusted to do properly the necessary culinary work. In such cases, early residents relate, Dr. Handy actually and literally, with his own hands, prepared suitable nourishment — not only once but until the patient recovered.

DR. HANDY SHOT

A few minutes after noon, September 24, 1891, at the southwest corner of Church and Pennington streets Dr. Handy was shot. He was helped to his office scarcely a block away. There he found his office partner, Dr. Spencer. Drs. Fenner and Green soon arrived, then to render all assistance possible. Dr. Handy was emphatic on one thing, viz., that he would have no one touch him but Dr. Goodfellow. In accordance with his wishes Dr. Goodfellow was summoned from Tombstone. Dr. Handy was taken in a herdic to his home on North Main St., where one or more of the doctors remained with him.

DR. GOODFELLOW'S RECORD TRIP

Our veteran telegrapher — Mr. H. W. Howard — Southern Pacific Dispatcher that day, relates wiring for Goodfellow and arranging a conveyance for him. A Tombstone livery team, at full speed around those mountain curves took him to Fairbanks. There a wheezy locomotive awaited him. Goodfellow himself drove the engine with throttle wide open over the trestles and around the sharp curves of that narrow gauge track to Benson.

Mr. A. S. Reynolds — our enthusiastic pioneer — was a Southern Pacific brakeman on a work train waiting for orders at Willcox. The message flashed over the wire that Dr. Handy had been shot. Agent and crew were lamenting this unfortunate circumstance, when the agent was

called to the key and, a few minutes later, brought out instructions for the crew to take engine and caboose to Benson, pick up Goodfellow and take him to Tucson. Soon after they reached Benson, Goodfellow arrived and transferred to the Southern Pacific engine. Reynolds and the conductor were in the cupola of the caboose and saw Goodfellow running the engine. He took those curves west of Benson — noted in early railroading — at such a rate of speed that at one time the conductor jumped up and set the brakes of the caboose, fearing a derailment. When they reached the station of Tucson, they were instructed to proceed to the Main St. crossing less than two blocks from Dr. Handy's house.

OPERATION

Dr. Goodfellow arrived about 8 p.m. A consultation was held with Drs. Spencer, Fenner and Green. The bullet had entered the left side of the abdomen about two inches below the lower rib, emerging at the very extremity of the spine. Undoubtedly it had perforated the intestines. There was hardly a ray of hope of recovery without attempting a repair of the injury. How much hope there would then be would depend upon the extent of the injury and upon their ability to repair such damages. This was laid before Dr. Handy and he requested that the attempt be made. So at 10:20 the operation was begun. It proved to be a tedious affair, for they found 18 or 20 perforations in four or five feet of the intestines. Just as the last stitches of the operation were being taken, Dr. Handy expired — at 1 a.m., September 25, 1891. This was Friday morning.

The body was embalmed and that evening lay in state at the Masonic Lodge rooms — on the upper floor of what is now the Orndorff Hotel. People flocked there night and day. Mexican women by scores remained there on knees in prayer. Guards tried to keep the number within reason, but so great was the crowd that fears were entertained for the safety of the building.

NOTE: Dr. Handy married Mary Page, daughter of Dr. Forbes' mother-in-law, when she was about 14 years old. There were four children. At one time old timers say that Dr. Handy was running two households and his favorite diversion was getting the other woman and her child in his buggy and driving past his own house.

It was his wife's threat to get a divorce that lead to the shooting. Handy threatened to kill any lawyer that took her case. The only one who dared was Frank Heney. Handy was a very high tempered, hard drinking man. John Etchells remembers going to his office with his father and being given a prescription which Etchells, Sr. tore up, after leaving the office, saying "they would return when Dr. Handy is in better condition".

Heney had just left the court house, when Handy went after him. In the fight Heney's pistol was discharged and Handy shot. Heney was acquitted.

PUBLIC ATTITUDE TO THE M.D.

MOST PEOPLE like their doctors and are generally satisfied with medical service. But the public offers some definite suggestions for ways doctors might improve the doctor-patient relationship.

These suggestions came to light when results of a nationwide survey done by a market research firm for the American Medical Association were tabulated. Heading the list of suggestions for doctors was "be available, come when called." This desire that a doctor be available when needed is not news to the medical profession, whose members have been working for the last five or six years to blanket the country with 'round-the-clock emergency call systems and similar informal arrangements to guarantee that availability.

Second suggestion from the public is "charge lower fees." Doctors have long suspected that most of the profession's public relations problems arise from the economic side of medicine. Yet in the survey individual doctors' charges received only moderate criticism by the public. The public is by no means as critical of doctor bills as it is of other costs of medical care, such as hospital and drug bills. Almost five times as many people (41%) say hospital bills have risen the fastest since World War II as say doctors' bills have (9%). Almost four times as many (32%) mention drug bills as having increased with the greatest speed.

People want doctors to take more personal interest in them and be more friendly and sociable, the survey showed. Assembly-line medicine, where patients are rushed through in

an impersonal manner is not what the average American is seeking in his own physician.

Closer adherence to appointment schedules is also suggested by the public who express annoyance at unreasonable waits to see their doctors. People also want doctors to be honest and frank with them in regard to illnesses and fees. They also think doctors ought to assume more responsibility for informing the public about medicine as a part of their efforts to get along better with the public.

SOUTHWESTERN MEDICAL ASSOCIATION

THE SOUTHWESTERN Medical Association held its annual meeting in Albuquerque October 17, 18, and 19, 1956, under the presidency of John H. Dettweiler, M.D. of the host city.

Guest speakers were:

Robert H. Barter, M.D., Associate Professor of Obstetrics and Gynecology, George Washington School of Medicine.

W. B. Bean, M.D., Professor of Medicine and Head of the Department of Medicine, University of Iowa School of Medicine.

John A. Migler, M.D., Professor of Pediatrics and Head of the Department of Pediatrics, University of Iowa School of Medicine.

Stephen Rothman, M.D., Professor of Dermatology and Head of the Department of Dermatology, University of Chicago School of Medicine.

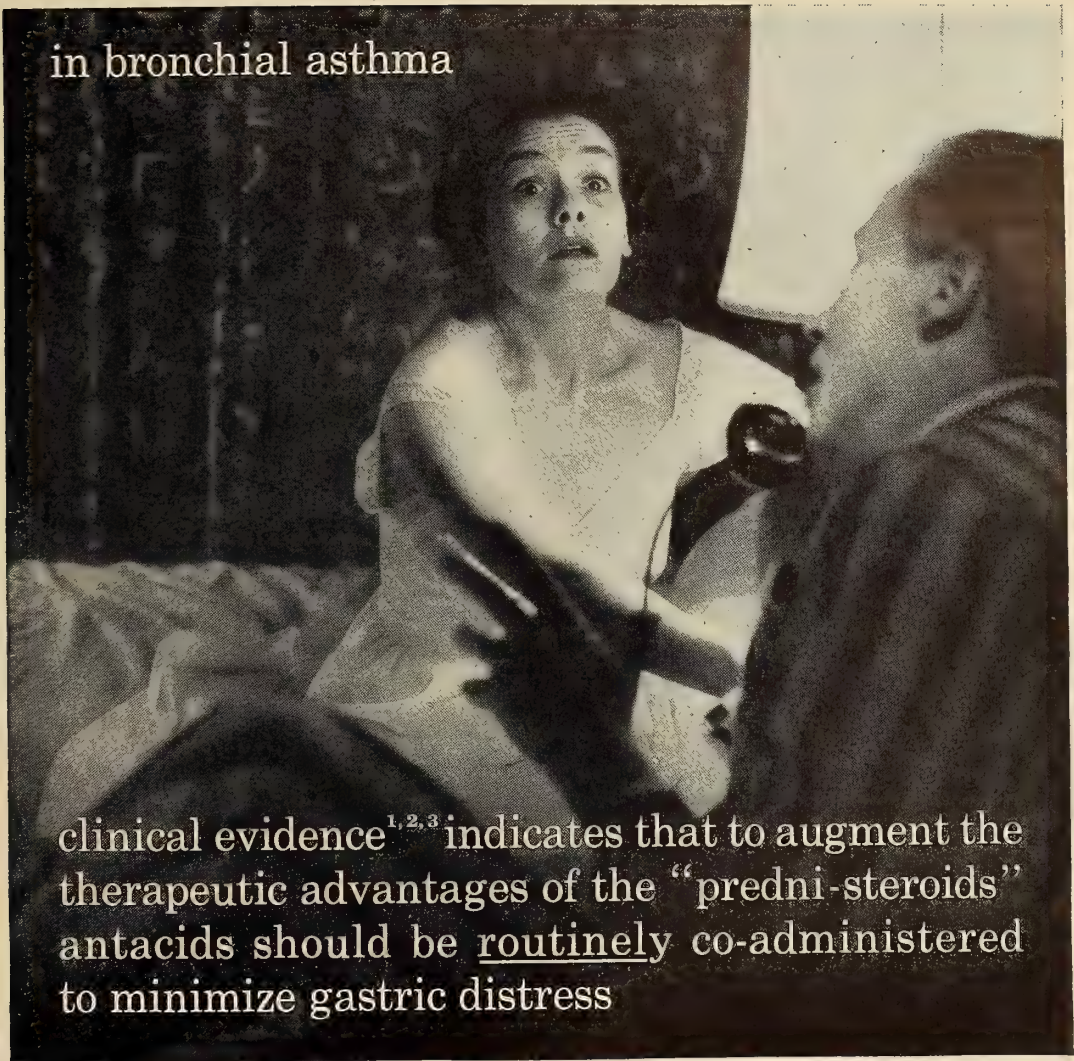
Colin G. Thomas, M.D., Associate Professor of Surgery, University of North Carolina School of Medicine.

Galen M. Tice, M.D., Professor of Radiology and Head of the Department of Radiology, University of Kansas School of Medicine.

Every autumn, the Southwestern Medical Association holds a meeting at which a group of outstanding medical men from various parts of the country appear as guest speakers. The program is designed to be of general interest. Physicians from Arizona, New Mexico, West Texas, Chihuahua, and Sonora attend. The scientific program is always worthwhile, and the social events for men and women both are invariably excellent.

The 1957 meeting will be held in El Paso and the 1958 session in Arizona — either Tucson or Phoenix.

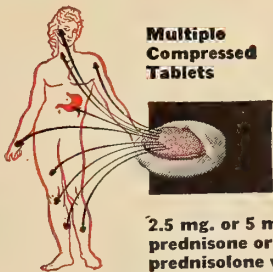
in bronchial asthma



clinical evidence^{1,2,3} indicates that to augment the therapeutic advantages of the "predni-steroids" antacids should be routinely co-administered to minimize gastric distress

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References: 1. Boland, E. W., J.A.M.A. 160:613, (February 25,) 1956. 2. Margolis, H. M. et al, J.A.M.A. 158:454, (June 11,) 1955. 3. Bollet, A. J. et al, J.A.M.A. 158:459, (June 11,) 1955.

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TOPICS OF *Current Medical* INTEREST

INSECTICIDE POISONING

By Paul B. Jarrett, M.D.

SEVERAL recent deaths in Arizona and numerous cases of organic insecticide poisoning with recovery, point to the need for information on the part of Arizona physicians which might be life-saving in a serious case of organic phosphate poisoning.

The same qualities that make the organic phosphate insecticide such as Parathion, Tetraethyl pyrophosphate (TEPP) and others such excellent bug killers, make them also excellent killers of warm blooded animals. These compounds were first formulated by the Germans in research for a toxic war chemical and are related to the "nerve gasses" that are justifiably dreaded by civil defense and military officials alike. They all have in common a derivation from phosphoric acid and act by interference with the enzyme choline-esterase of the blood and tissues. Obviously with a preponderance of acetyl-choline and no means of destruction of this chemical compound, the organism will have the effect and symptoms of para-sympathetic stimulation, the same as in mushroom poisoning or Calabar bean (physostigmine) poisoning. (This latter used to occur frequently in Africa through the jolly efforts of certain natives to establish guilt in a suspect — if he survived the "ordeal bean" concoction he was innocent. Practically everyone was guilty as sin.) It isn't necessary here to recount the symptoms of a very potent parasympatheticomimetic.

Important to remember is that the antidote is Atropine. In an individual with history of contact with the organic phosphates, (and it can be absorbed by any route) with symptoms of parasympathetic stimulation, a fiftieth of a grain of atropine intravenously, repeated every fifteen minutes until signs of atropinization occur may be life-saving.

Before the start of the next dusting and spraying season, we hope to have a full-length article on these poisons, but more cases are seen at the close of the season for two reasons, the organic phosphates are cumulative, and the applicator who has gone through the summer without poisoning himself concludes the stuff isn't so bad after all.

P. L. 569 MEDICARE

With the signing of Public Law 569, dependents of military personnel are assured broad medical care as a statutory right, and the Defense Department achieved a major goal in its program to make a military career more attractive. This program is in no way concerned with the Veterans Administration. The statute recites:

"The purpose of this Act is to create and maintain high morale throughout the uniformed services by providing an improved and uniform program of medical care for members of the UNIFORMED services and their dependents."

Eligibility for dependent medical care includes:

- (a) The lawful wife of the service member, or lawful husband.
- (b) Children, under 21, unmarried, including adopted or step children.
- (c) Parents and parents-in-law, if in fact dependent for over half of their support.
- (d) Widows and the dependent children of deceased members whose death occurred on active duty or in a retired status.

The scope of the care includes:

- (a) Diagnoses
- (b) Care for acute medical and surgical conditions
- (c) Care for contagious diseases
- (d) Immunizations
- (e) Maternity and infant care
- (f) Certain limited dental care

The services facilities will NOT provide:

- (a) Care for chronic disease and domiciliary cases
- (b) Care for nervous and mental disorders
- (c) Elective medical and surgical treatments
- (d) Prosthetic devices, hearing aids, orthopedic footwear, etc.
- (e) Non-emergency ambulance service
- (f) Routine home calls

In the case of wives and children of active duty personnel, hospitalization may be provided at civilian facilities with the only charge being \$25.00 or \$1.75 per day, whichever is higher, for each period of hospitalization.

This Association will be required to determine (a) whether or not it shall participate in this program, (b) what agency shall be selected to handle the administrative work in Arizona and act as the "fiscal agent" under the law, and (c) develop a policy in regard to any fee schedule or fee schedules under which physicians will work in this State. Council is currently considering this problem.

**EARLY MEDICAL MANAGEMENT
OF MASS CASUALTIES IN
NUCLEAR WARFARE**

NUCLEAR weapons are capable of producing large numbers of injured almost instantaneously. Under conditions of nuclear warfare, it is apparent that at least during the early post-detonation period, a wide disparity will exist between the medical load imposed and the surviving local medical means available. The number of casualties in need of care will far exceed the normal patient capacity of medical installations in a disaster area. In meeting the problem, the extent of medical care given will be determined by two considerations: i.e., the providing of maximum care for the maximum number of patients and the avoidance, wherever possible, of procedures which will reduce any patient's ability to care for himself. The medical effort will be limited by the large number of injured to be treated at one time, the availability of evacuation resources, and the capabilities of the supporting medical units.

General Principles.

Realization of Sound Professional Sorting by —

- (1) Prompt return to duty of patients with minor injuries, who are or easily can be rendered effective.
- (2) Establishment of a system of treatment priorities for the injured, such that —
 - (a) Early priority is given to those injured who are most likely to respond to the treatment available at the time and place.
 - (b) Only the most expedient therapeutic procedures sufficient to meet immediate medical requirements will be performed.
 - (c) Excepting urgent life-saving procedures, nothing will be done which decreases the patient's ability to care for himself.

Economical Utilization of Medical Assets by —

- (1) Maximum conservation of medical effort, in that trained medical individuals are not assigned to first aid, rescue, transportation, or non-technical labor functions.
- (2) Rigorous conservation of essential supplies.

Planning and Training for Medical Management of Mass Casualties in Nuclear Warfare, in Which:

- (1) Preparation is based on knowledge of

nuclear weapons effects and sound medical practices.

- (2) Training is practical rather than theoretical.

Nuclear Weapons Effects and Injuries Produced. a. Nuclear weapons produce blast, thermal, and ionizing radiation effects. Resulting injuries are produced by one or a combination of the three effects. Multiple injuries will be common. The incidence and severity of injury will be dependent upon several factors, including: type and size of weapon, distribution of target population, physical composition of structures in the target area, meteorological conditions, and the warning time interval.

b. Injuries produced by positive and negative pressures within the blast wave resulting from a nuclear detonation are not of medical significance. However, many missile injuries may occur as a result of flying debris of relatively low velocity (1,000 feet/second or less) or from personnel being cast about by the blast wave. Contusions, abrasions, lacerations, crush injuries and penetrating wounds will be prevalent. Amputations, avulsions, and perforating wounds will not be uncommon, but less frequent. Personnel within or adjacent to buildings may receive a higher percentage of head trauma. Except for these, distribution of injuries may be expected to occur in proportion to the body area. The anatomical distribution of wounds will approximate the following:

- (1) Head, face and neck12 percent
- (2) Thorax15 percent
- (3) Abdomen15 percent
- (4) Upper extremities37 percent
- (5) Lower extremities37 percent

c. Thermal injuries result from the flash incident to detonation of the weapon or are produced by ignition of clothing, by burning buildings and other combustible materials. Flash, or profile burns, involve only those portions of the body in direct line of sight with the detonation. They are more frequent on the exposed skin surface, but, with sufficient thermal energy, may be sustained through clothing. Flash burns incurred under clothing will be less severe than flash burns occurring simultaneously on exposed skin. Flame burns may cover great areas of the body surface, are usually severe, and result in great morbidity.

d. Radiation injuries may result from either prompt or residual radiation effects. Prompt

radiation is of very short duration and occurs in a limited area relatively close to the point of detonation. Of those exposed to high dosages of prompt radiation, few will survive injuries produced by other effects. Residual radiation effects cause injuries to individuals exposed in areas contaminated by radioactive fission products or in areas where type of weapon burst has caused induced radiation. This is of little immediate medical significance because appearance of symptoms is delayed.

First Aid and Rescue. a. The size of the medical load and the limited medical means available make it essential that medical service personnel be used only in medical treatment facilities. The principle of economical utilization of all medical assets precludes the use of trained medical personnel for first aid or rescue operations.

b. It is recognized that the saving of many lives and limbs of the injured will depend upon proper and prompt application of first aid and effective rescue procedures. First aid will consist of self-aid, "buddy aid", or aid rendered by rescue teams. Training programs in first aid are indicated for all personnel, and should include:

- (1) Application of dressings.
- (2) Control of hemorrhage.
- (3) Emergency splinting of fractures.
- (4) Handling of the injured.
- (5) Artificial respiration and maintenance of upper airways.
- (6) Emergency care of certain wounds (Examples: hand injuries, jaw injuries, and sucking chest wounds).

Medical Sorting. (a) Sorting or triage is defined as the process of sorting sick and wounded on the basis of the urgency and type of condition presented, so that they can be properly routed to medical installations appropriately situated and equipped for their care. Sorting is the key to the effective management of large numbers of casualties. It is the immediate grouping of patients according to type and seriousness of injury, likelihood of survival, and the establishing of priority for treatment to assure medical care of greatest benefit to the largest number. Sorting effects early release from patient status of maximal numbers of personnel who are capable of continuing their primary duty, caring for themselves and others, or can participate in rescue activities. Medical sorting

permits an orderly, timely, and efficient utilization of available medical means. It is a continuing procedure carried out at each echelon of care as patients are exacuated rearward. The critical importance of sorting demands that physicians assigned this responsibility be selected on the basis of mature professional judgment.

b. The objectives of medical sorting are accomplished by designating patients within categories. Criteria for grouping will vary with the situation, the backlog of patients awaiting medical care, and the capability of each receiving medical unit. Categories for medical care should be as follows: first, Minimal Treatment, patients who can be returned to duty immediately; second, Immediate Treatment, patients for whom expedient procedures will save life or limb; third, Delayed Treatment, patients who, after emergency care, incur little increased risk by delay in further treatment; and fourth, Expectant Treatment, patients so critically injured that only complicated and prolonged treatment offers any hope for improving life expectancy. Examples of these four groups of patients are as follows:

(1) Minimal treatment. In this group are effective individuals who can be returned to duty with minor injuries such as small lacerations and contusions, simple fractures of small bones particularly of an upper extremity, and second-degree burns of less than 10 percent of the body surface, not including incapacitating burns of the hands or face. Also included in this group are non-effective individuals who require holding facility care for their daily needs, such as: persons with second-degree burns of the face interfering with sight and/or eating, incapacitating burns of both hands, disabling fractures of minor bones, or moderate neuropsychiatric disorders.

(2) Immediate treatment. Patients with hemorrhage from an easily accessible site, extensive lacerations, rapidly correctable mechanical respiratory defects, severe crushing injuries of the extremities, open fractures of major bones, and incomplete amputations.

(3) Delayed treatment. Patients with moderate lacerations without extensive hemorrhage, closed fractures of major bones, and non-critical injuries of the central nervous system.

(4) Expectant treatment. Patients with critical injuries to the respiratory or central nervous

systems, significant penetrating abdominal wounds, multiple severe injuries, and severe burns of large areas of the body surface (40 percent and above).

c. The proportional distribution of patients among the above four categories may vary considerably, but for planning purposes will be as follows:

| | |
|---------------------------|------------|
| Minimal Treatment | 40 percent |
| Immediate Treatment | 20 percent |
| Delayed Treatment | 20 percent |
| Expectant Treatment | 20 percent |

Treatment. a. The extent of treatment given by medical personnel to casualties during the first few days after the employment of nuclear weapons will depend upon the medical capability, the number and types of injured, and the situation. The prime objectives of treatment are to restore a casualty to a useful state, increase his self-sustaining status, to preserve life and to prevent or arrest physical deterioration until more extensive treatment can be given. With limited medical personnel, material and facilities, only emergency medical care may be possible and definitive treatment deferred until such time and place that required procedures may be properly carried out. Though emergency treatment is a primary function of aid stations, it may conceivably be required of any medical facility proximate to the source of mass casualties. Thus a hospital staffed and equipped for more definitive care may, in the initial 24 to 72 hours, of necessity render only emergency treatment. Penalties for delay in ideal management must be assumed. No treatment should be undertaken which would unwarrantedly cause a casualty to be less able to care for himself or which would jeopardize his probabilities for later more effective treatment. Contrarily, where possible, treatment should be as complete as possible and the patient returned to duty or a holding unit. Initially definitive treatment to hasten recovery and improve or correct functional impairment caused by trauma may be available only in facilities somewhat remote from the injury source.

b. Emergency medical care is concerned primarily with resuscitation and essential surgical procedures.

(1) Resuscitation will involve principally the treatment of shock following trauma. Early fluid replacement therapy may be limited by the amount of parenteral fluids available. When

possible, oral fluids should be used as the method of choice, or as an adjunct aimed at reducing the amount of parenteral therapy required. First priority for parenteral fluids should be given to patients in shock due to hemorrhage but whose bleeding has been controlled and to patients with burns of 20 to 40 percent of their body surface who cannot tolerate oral fluids.

(2) Essential surgery includes the following emergency procedures: ligation of accessible major vessels, tracheotomy, simple closure of sucking chest wounds with dressings, relief of tension pneumothorax by flutter valve, relief of hemothorax by aspiration, completion of partial amputations, removal of large foreign bodies from non-vital areas, splinting of major fractures, and wound dressing or reinforcement of dressings where indicated. The application of a tourniquet for the arrest of hemorrhage should be reserved for those cases which cannot be effectively treated with a firmly applied pressure dressing, or by ligation of a readily accessible vessel. A properly applied tourniquet will arrest hemorrhage but concomitantly accepts probably amputation of the extremity. A tourniquet should not be released or removed until exposure and ligation of the bleeding vessels can be accomplished. Promiscuous use of the tourniquet could result in an unwarranted sacrifice of many limbs.

c. Definitive medical care is concerned with the proper treatment of specific types of injuries, as discussed below.

(1) Missile wounds may involve any region of the body but approximately 60 percent are injuries of the extremities. Tissue destruction usually is not extensive in injuries produced by low velocity missiles. Normally, soft tissue wounds are effectively treated by careful debridement of all devitalized tissue and foreign material, with subsequent closure 4 to 10 days later. Initially, circumstances may permit only wound cleansing, relaxing incisions, removal of obviously devitalized skin and other tissue, counter drainage where indicated and dressing. Such wounds should not be packed but outer dressings be firmly applied to splint and to control oozing. Attention should be given to intact regional blood vessels and nerves. Liberal longitudinal division of compartmentalizing fascia is indicated. Immobilization of large wounds is protective against further hemorrhage

and shock. No primary suturing of soft tissue wounds should be done, for all such wounds are contaminated. Open fractures should be similarly treated and immobilized. Metallic fixation should be avoided. In joint injuries the capsule alone should be closed. Without exploration the extent and seriousness of injuries to the abdomen and thorax are difficult to determine. Simple wounds of entrance frequently lead to excessive visceral damage requiring skill and time to repair. Thoracic wounds may respond well to aspiration as indicated but those not doing so may be in need of extensive surgery. In both instances such time-consuming procedures must be deferred initially and primary attention be directed to the many with reasonable expectancy of survival.

(2) Thermal injuries may constitute a major medical problem in nuclear warfare.

(a) The percentage of surviving casualties having burns will vary widely according to circumstance. Flash burns of second degree do well without a covering dressing. The open or exposure treatment of burns is an accepted practice and initially may be the only method of treatment available. Sterile dressings, being a critical item, should be reserved for those casualties which, if protected, will be returned to duty, e. g., burns of hands and selected circumferential burns. Burns about the head and neck should be left exposed to the air. Second-degree burns are comparatively painful, and application of a simple bland ointment will afford considerable relief. Fluids should be used freely by mouth. Providing urine output is maintained, water by mouth should be fortified by the electrolytes salt and soda (3.0 gm NaCl and 1.5 gm NaHCO₃/liter water). All burn wounds are contaminated and antibiotic therapy should be started as soon as available. A large percentage of burn patients will have other associated injuries which will require surgical attention. Within hospital facilities, segregation of burn patients should be carried out if possible to avoid contamination of surgical facilities.

(b) The percentage of the body area burned is determined by the rule of nines, as shown:

(c) The formula below expresses the estimated fluid requirement during the first 24 hours for patients with 20-40 percent body area burns. During the second 24 hours, half of this amount

is required. Caution must be exercised in cases of respiratory tract burns because of an increased tendency to develop pulmonary edema. Tracheotomy is essential and should be done in most cases of respiratory tract burns.

| | |
|-----------------------------------|---|
| Colloid (Blood, Dextran, etc.) | = Percent area burned × weight in lbs. × 0.50 |
| Electrolyte | = Percent area burned × weight |
| Glucose in water | = 2,000 cc. |

(3) Radiation injuries may be indicated by personnel dosimetry data. However, symptomatology and clinical findings must determine the need for medical care. Lacking specific preventive or curative therapy, this type of injury alone is no medical emergency. Non-activity should be recommended only if warranted by the serious clinical condition of the patient. The length of time interval between exposure and onset of symptoms forecasts the prognosis — the shorter the interval, the graver the prognosis. Hospital treatment, if necessary, should be directed toward maintenance of fluid and electrolyte balance, nutrition, rest, hemoglobin blood level of at least 10 grams and control of infection.

(4) Patients having radiation plus missile and/or thermal injuries should be treated as non-radiation cases until the contrary is evident. Every effort must be made to enhance early healing of wounds in cases of combined injuries.

(5) Psychiatric casualties. Early evidence of organization and the establishment of a functioning system of prompt medical care will contribute immediately to effective rehabilitation of patients with mental disorders. All psychotherapeutic measures should be undertaken in a group atmosphere with an attitude of expectancy for recovery. Treatment consists of simple direct interviews, reassurances, periods of rest, food, and participating duty in the disaster area. Little or no sedation is necessary or desired. Patients with frank psychoses must be treated accordingly.

d. Problems of special therapy, such as blood IV fluids, antibodies, biologicals, anesthesia, and sedation require separate consideration.

(1) Intravenous fluids and equipment may not be readily available. Water by mouth or water

reinforced with electrolytes (salt and soda) may be the only supporting fluids available. Hypodermoclysis which is simple in application, safe and relatively effective, may be used in lieu of intravenous therapy.

(2) The liberal use of whole blood and plasma expanders, such as plasma, serum albumin, and dextran, has become an established practice in the treatment of traumatic injuries. The use of each has presented its problem and research continues for better preparations and techniques. Volemic replacement therapy may be lifesaving and may be urgently indicated. During the emergency period of mass casualty management, the available blood and plasma volume expanders must be reserved for those patients in the immediate and delayed treatment groups, who may benefit most from the available fluids. Blood should not be given unless hemorrhage can be controlled readily.

(3) Antibiotics, if available, should be given for most injuries. Open wounds and burns are contaminated and early systemic antibiotic treatment should promote healing. Local antibiotic treatment is not recommended except for body cavities and joint spaces. Continuation of therapy for 5 days is desirable. A long-acting penicillin or broad spectrum antibiotic is preferred. Oral administration may be mandatory. The patient's clinical condition and availability of supplies will determine the agent employed and the route of administration, the dosage and duration of treatment. Regardless of the antibiotic employed, the development of resistant bacterial strains and secondary infections is expected. Provision should be made for the utilization of additional antibiotics at a later date.

(4) The biological product to be considered in the care of mass military casualties is tetanus toxoid. Assuming that all military personnel will have received the mandatory tetanus toxoid immunization, a booster dose at the time of injury can be omitted with reasonable safety. Casualties who have received only two initial immunizing doses require a stimulating dose (1.0 cc.) as soon as practicable following injury. Civilian personnel lacking immunization should be administered tetanus antitoxin (3,000 u.) as early as possible.

(5) Anesthetics, analgesics and sedatives will be needed in the treatment of mass casualties. The anesthetic employed will depend on the

availability of agents and personnel qualified in their use. Facilities employing anesthetics for surgical procedures may be restricted to open ether or chloroform with administration by less qualified personnel under supervision. Local anesthesia may be prevalent. Intravenous barbiturates should not be used in patients who have face, neck, or chest injuries. Frequently pain can be controlled by mild analgesics, such as aspirin or codein. When severe pain requires more potent drugs, such as morphine or demerol, the intravenous route is preferable. Oral barbiturates are recommended when sedation is required, but their use should be kept to a minimum. Any opiate or barbiturate reduces the ability of the patient to care for himself.

Evacuation and Disposition. a. Orderly evacuation and timely disposition of patients are essential for efficient medical service. In nuclear warfare, the large numbers of injured and limited medical resources immediately available increase the importance of proper evacuation and disposition.

b. The responsibility for rescue and transportation of patients from the area of damage to the first medical facility must be fixed in every Disaster Plan. Clearance of heavy wreckage which may be essential to rescue efforts is a normal function of elements of Civil Defense other than the medical service. As stated previously, the principle of economic utilization of medical efforts precludes the use of trained medical personnel for first aid or rescue operations.

c. Medical evacuation begins at the forward aid stations (sorting stations) located or set up at the periphery of impact areas. It is directed rearward to supporting medical facilities. Priorities for evacuation are established through sorting of the injured at forward medical units. The rate of evacuation is influenced by the mode and availability of transportation and is regulated by the capabilities of supporting medical installations.

d. Under the conditions imposed by mass casualties, the conventional criteria for discharge of patients from medical treatment facilities must be modified. Medical treatment facilities must be cleared rapidly of all patients who are capable of duty or self-care. Care of these individuals is the function of holding-type units and not medical treatment facilities.

e. It is anticipated that the situation will not permit conventional evacuation of patients during the immediate post-impact period. However, individuals requiring long-term hospital treatment or those not expected to contribute to the local mission should be further evacuated at the earliest opportunity. Medical treatment facilities adjacent to mass casualty areas must not become paralyzed with the details of lengthy post-operative care.

Records. a. Medical records are indispensable adjuncts to proper medical care. Admission and disposition lists are essential in controlling patient flow between and within medical treatment facilities.

b. The minimum requirements for medical records include essential identifying and relevant medical data and a simple system for periodic admission and disposition reporting. Pertinent data should be documented on standard medical records, although prevailing circumstances may preclude entering all the requested information. Baggage tags or other suitable improvisations can be used to supplement supplies of standard medical field forms.

Preventive Measures. a. The number of casualties resulting from nuclear warfare can be reduced appreciably through general application of individual and unit protective measures. Complete protection from a direct hit cannot be expected, but prevention of injury can be appreciable in other areas.

b. For individuals the protective value of fox-holes, trenches, field fortifications and other type shelters is known, and their construction and use should be routine. Good clothing discipline will reduce the number and severity of flash burns through the shielding afforded by helmets, rolled-down sleeves, and gloves. Individual evasive action immediately after a detonation will decrease missile injuries, and in some instances reduce thermal and nuclear radiation injury.

Plans and Training. Professional personnel may be utilized to better advantage in supervising rather than performing actual patient care, which in this event would be performed by paramedical personnel. Non-professional personnel may be used to supervise locally recruited individuals, particularly for administrative and logistic support. Within medical organizations, efficiency will depend upon controlled patient

flow, adequate supplies, and continuing essential housekeeping and administrative functions.

Supply. In mass casualty situations, availability of supplies will be vital to the successful accomplishment of the medical service mission. Universal stringent supply economy must be enforced; for example, discarding of any usable material is prohibitive. Rigorous control and conservation of supplies will be mandatory. For effective supply function during emergencies:

a. All medical facilities must have maintained authorized stock levels.

b. Reserve medical supplies for use in mass casualty treatment should have been planned and programmed. Such reserves should be packaged in small portable units designated for treatment of burn and traumatic injuries, and be dispersed to known protected stations within each medical facility. Expiration-date items should be regularly rotated to current stocks.

c. Practical planning for improvisation of essential supplies should have been carried out, for example: salvaged metal food containers may serve as dishes for mass feeding, hospital linen may be converted to bandages, or soiled dressings washed and sterilized for re-use.

d. Coordinated planning with adjacent medical or other technical units for essential supply items must have been accomplished.

EDITOR'S NOTE:

The above data was taken bodily from TB Med 246, Department of the Army Technical Bulletin.* It is their most recent compilation summarizing the medical management under these difficult circumstances. However, it does rather fully present a problem that we must anticipate and for which we must be prepared. Periodically in forthcoming issues specific articles are to be taken from the April 1956 issue of the Journal *MILITARY MEDICINE*. This was a symposium for the handling of the casualties in nuclear warfare, written by national authorities in their specific fields. Permission has been obtained for republication. Should you desire to obtain their complete 188 page reprint, it is available for \$1.50 in the paper back cover or \$3.00 in the buckram binding. Address any request to: Colonel Robert E. Bitner, Secretary-Editor, *MILITARY MEDICINE*, Suite 718, New Medical Building, 1726 Eye Street, N. W., Washington 6, D. C.

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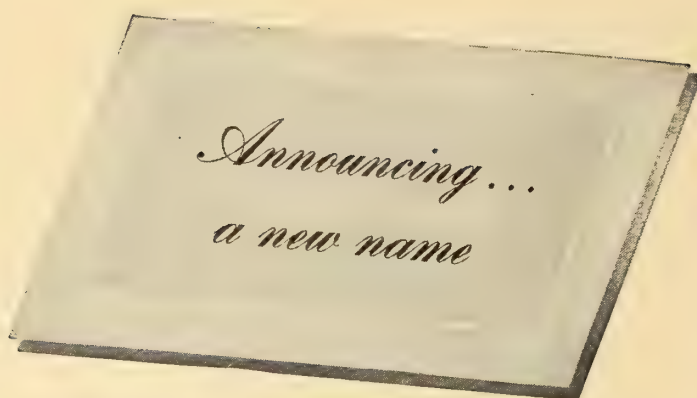
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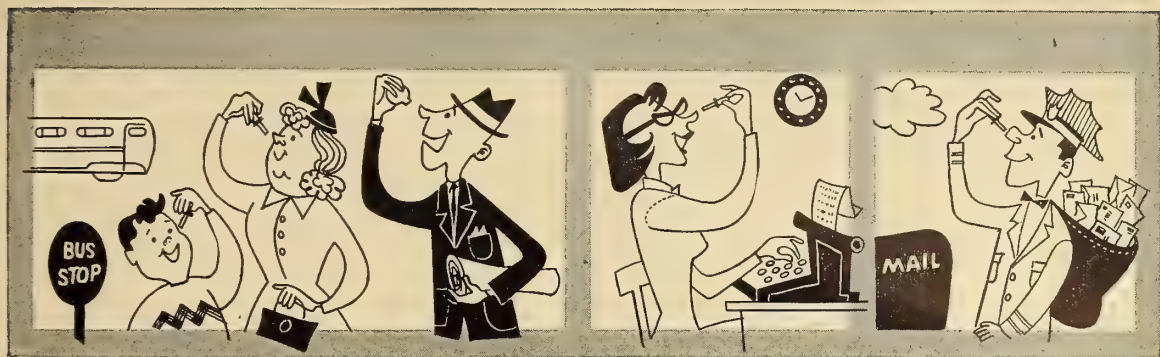
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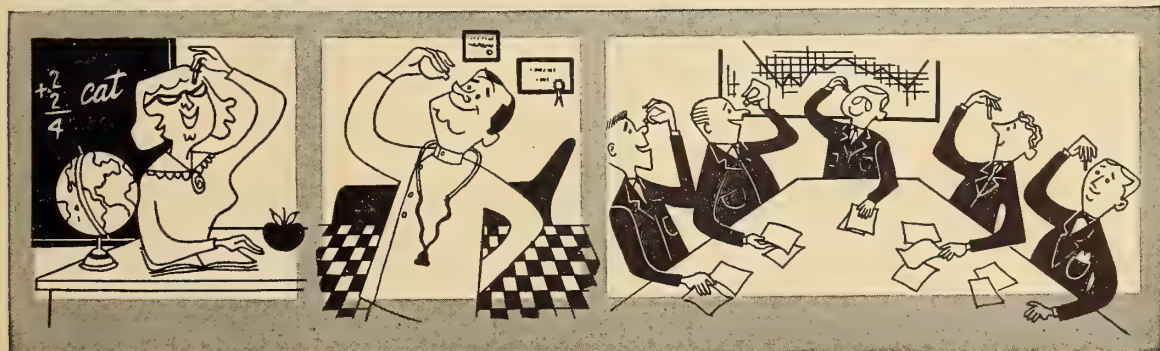
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leakproof, delivers
a fine mist

Neo-Synephrine (brand of phenylephrine)
and Zephiran (brand of benzalkonium,
as chloride, refined),
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"You try
to scrub the
bathtub
with your
back aching
morning
till night!"

"I don't know
about bathtubs,
but two days
ago I couldn't
reach a
shelf higher
than that."

"I thought maybe
I slept in a
draft. Never had
a stiff neck
like this before."

"That's nothing.
I went around
with my arm in
a sling for
nearly two weeks—
had to sleep
with a pillow
at my back
so I wouldn't
roll over on it."

"I thought
I was getting
too old
for high heels—
low heels
didn't help.
My leg hurt
down to
the ankle."

"That's f
I'm on r
feet all
but it w
my arm
bothere



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Prednisone + Acetylsalicylic Acid + Aluminum Hydroxide + Ascorbic Acid
Potent corticosteroid anti-inflammatory action complemented by rapid
analgesia; doubly protected with antacid and supplemental vitamin C

"My back
was so tight
I couldn't
even get on
and off
the bus;
now I can
climb stairs."

"Take it
from me,
you should
be glad
you saw him
early in the
game so he
could do
some good."

"Good?—
why, he's
got me doing
exercises
I haven't done
in years."

"I hope
he helps
my knee
that quick."



spread of common rheumatic complaints

Summated, protective corticoid-analgesic therapy

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- brings specific, complementary benefits to the treatment of muscle, ligament, tendon, bursa and nerve inflammation
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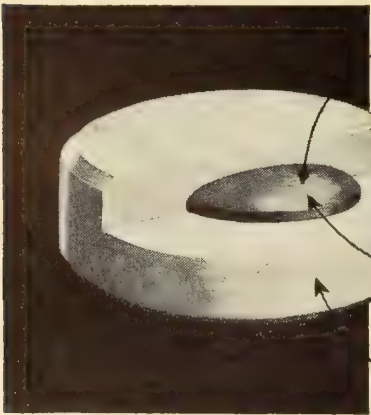
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In "Rheumatism"

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combine:

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PROPERLY FORMULATED



PREDNISOLONE (1 m
+
ASPIRIN (0.3 Gm.).....
+
ASCORBIC ACID (50
+
ANTACID (0.2 Gm.).....

Physical separation of the steroid component from the aluminum hydroxide as provided by the Multiple Compressed Tablet construction assures full potency and stability of prednisolone.

- | | |
|-----------------------------|---------------|
| *Early rheumatoid arthritis | Synovitis |
| Rheumatoid spondylitis | Tenosynovitis |
| Osteoarthritis | Myositis |
| Still's disease | Fibrositis |
| Psoriatic arthritis | Neuritis |
| Bursitis | |

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..... for anti-inflammatory, anti-rheumatic benefits
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..... for analgesia plus additional anti-rheumatic
activity.

..... for anti-stress support that guards against ad-
renal ascorbic acid depletion.

(Ascorbic Acid present as 60 mg. Sodium Ascorbate.)

..... dried aluminum hydroxide gel minimizes the
possibility of gastric distress.

DOSAGE: 1-4 TEMPOGEN Tablets t.i.d. or q.i.d.
(TEMPOGEN Forte, 1 or 2 tablets t.i.d. or q.i.d.)
for one or two weeks. Then lower by 1 tablet every four
or five days to maintenance level.

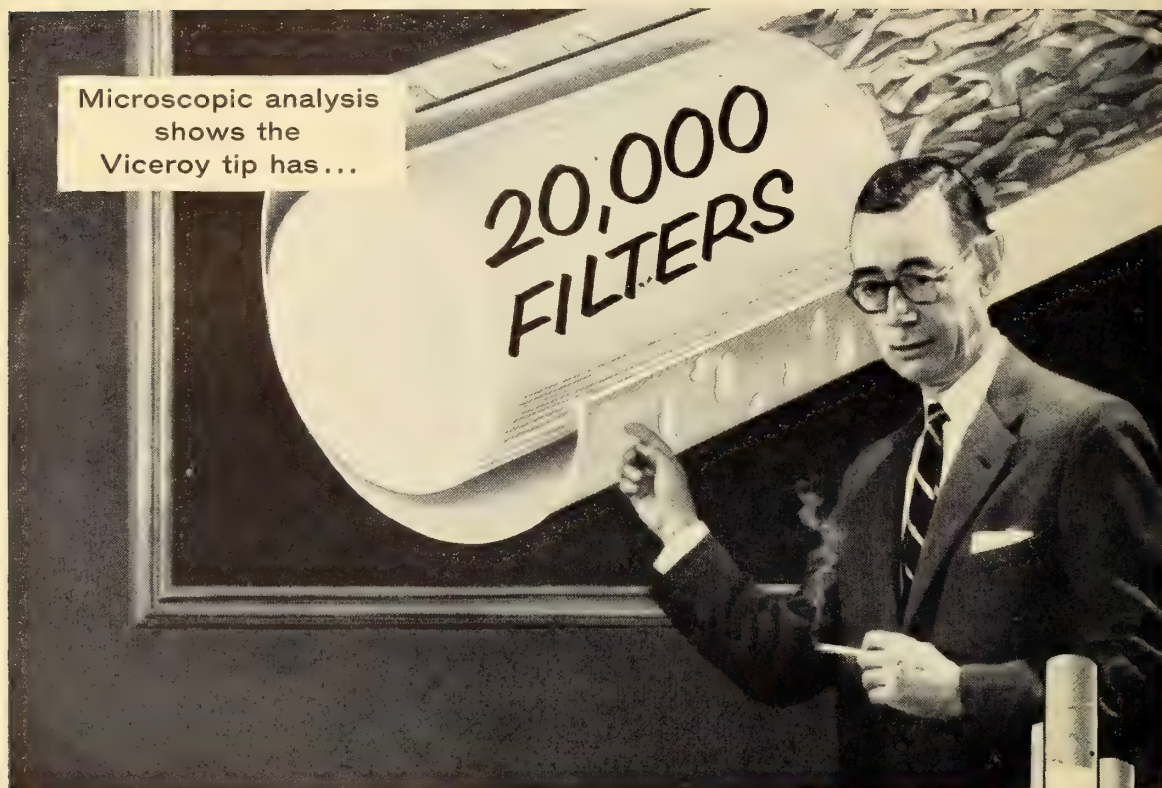
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—in bottles of 100 Multiple Compressed Tablets.
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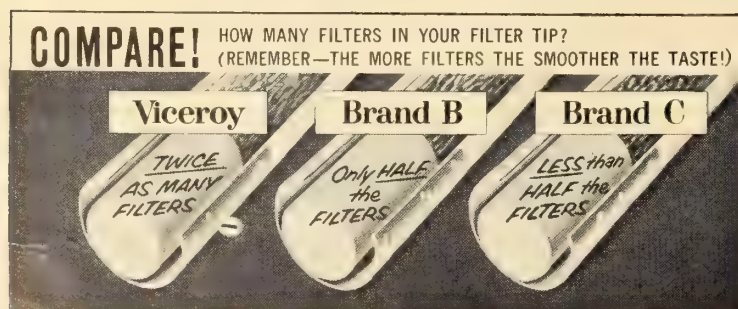
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prevents postpartum hemorrhage
speeds uterine involution



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Ampoules of
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Tablets of 0.2 mg.

DOSAGE: Generally, 0.2 to 0.4 mg. I.V. or I.M. immediately following delivery of placenta. Thereafter, 0.2 to 0.4 mg. three or four times daily for two weeks.



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MEDICAL DIRECTOR
DUKE R. GASKINS, M. D.



Dear Doctor:

Season's Greetings to each of you.

It is my wish that 1957 brings you good health, good fortune, and continued success, and that we can continue to work together as we have in the past.

And so, doctor, for the holiday season, MERRY CHRISTMAS and HAPPY NEW YEAR!

Sincerely yours,

HOSPITAL BENEFIT ASSURANCE

Duke R. Gaskins, M. D.

DRG:sk

Organization PAGE

By Norman A. Ross, M.D.

THE MEDICAL Society of the United States and Mexico, the organizational meeting of which was held November 24, 1956, at the Pioneer Hotel in Tucson, is a thing that can mean much to the states of Sonora, Sinaloa, Jalisco, and Arizona. This organization has the endorsement and support of the heads of state and can, therefore, be expected to continue and succeed.

* * *

In December, we man a nationally subsidized military Dependent's Act. We are informed that present plans allow that this program will be brokered through a mutual publicly-owned agency of our choosing. The agency will accept this. This subsidized program will be further softened by additional brokers at the national level. From some of the discussion, it would appear that this program is considered by at least some physicians as "creeping socialism".

On July 1, 1957, we physicians will be called on to certify a half million or so persons retiring under Social Security Law. These people will range in age from fifty to sixty-five and will be **presumed to be** permanently disabled. This service will be — by, of, and for — the welfare and vocational training agencies of government. Some of our fellows may see this as **socialism**.

* * *

A modern school of nursing is included in the budget of the University of Arizona at Tucson and Arizona State College at Tempe for 1957.

* * *

A NEW BLUE CROSS-BLUE SHIELD BUILDING

This new structure will be located at 331 West Indian School Road, Phoenix, Arizona. It will consist of 15,500 square feet and will be built at a bid cost of \$174,814.

The need for additional space is apparent when we are acquainted with the fact that during the period from December 31, 1951 to December 31, 1955, the plan's combined membership grew from 213,881 to 288,316.

Blue Cross-Blue Shield will continue to main-

tain enrollment branch offices in Tucson and Flagstaff.

* * *

THE SECRETARY'S LETTER, American Medical Association, 535 North Dearborn Street, Chicago 10, Illinois.

Announcement is made of the A.M.A. Clinical Session in Seattle, November 27-30 and sounds interesting.

The scientific program will be beamed at the general practitioner, and subjects have been carefully chosen to be of interest and practical value. The program will include panel discussions, individual papers, motion pictures and closed-circuit television clinics.

There will be 45 papers dealing with such subjects as fluid balance, urological problems, office psychiatry, varicose veins, fractures, diabetes and heart disease. Well-known medical educators and practicing physicians from all parts of the country will participate.

The television clinics will include both wet (operative) and dry (non-operative programs). Talent will be drawn largely from Seattle because of the necessity of rehearsals and frequent briefing. There will be clinics on block anesthesia, treatment of burns, bleeding problems, intestinal obstruction, caesarean section, hand surgery, vein stripping and other subjects.

300 STUDY MEDICAL PUBLIC RELATION FOR TWO DAYS at the American Medical Association's Public Relations Institute in Chicago. These people learned the Public Relations value of local science fairs, something about the methods used to teach new medical society members about organized medicine, how medical societies make their voices heard in legislative halls and what goes into the planning, producing and promoting of local radio and television programs.

Public Relations at a national level were discussed with the following comment:

It isn't easy to select the highest priority issues. Shortages of physicians, actual or alleged, costs and methods of financing medical care, A.M.A.'s relations with other national or-

ganizations, national legislation and national political developments are the subjects that warrant particularly close scrutiny."

A.A.G.P. DEDICATION ADDRESS

"If the cost of all new medical and health facilities — hospitals, medical schools, medical society buildings, doctors' offices and other structures — during 1955 is added up, we would probably get a figure near one and a half billion dollars."

* * *

The Arizona Association of Nursing Homes at its second Institute at the Santa Rita Hotel, Tucson, Arizona, October 11, 1956, presented its general purposes:

"To promote the welfare of the people through the development of responsible and adequate nursing and convalescent home service in Arizona.

"To aid in the promotion of a code of ethics designed to regulate and elevate the standards of nursing and convalescent homes.

"To make available to physicians, hospitals and the public, a registry of qualified nursing and convalescent homes.

"To encourage professional education and scientific research in the problems and care of the aged and sick; Cooperate with public health agencies and with other organizations having similar objectives; and to do all things which may best promote the efficiency and adequacy of nursing and convalescent homes."

ANALGESIC

IN THE never-ending search for the ideal analgesic many compounds have been tried. At first they are exploited as the perfect pain reliever only to be put aside or be changed into newer compounds. Meperidene or Demerol is now in this category. When first marketed it was claimed to be the perfect analgesic. Eventually it found its proper place. Now the chemists have succeeded in splitting one of the bonds in the Meperidene molecule without completely destroying the analgesic effects. The advance reports make claims that the new compound is analgesic yet not addicting. As yet, the new compound has no name. Identified only by a code number, this preparation has been tried with favorable results in animal studies. It is now, or shortly will be available for clinical testing in human subjects.

Antos

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NEW

ATARAXOID is a unique, new combination of STERANE and ATARAX, which now permits simultaneous symptomatic control and reduction of attendant anxiety and apprehension in rheumatoid arthritis and other indications.

The added tranquilizer control, desirably easing mental stress, also directly assists clinical progress. It minimizes the chance of exacerbation related to emotional strain and facilitates patient confidence and cooperation in the therapeutic program toward maximum rehabilitation.

ATARAXOID exerts the anti-rheumatic, anti-inflammatory activity of STERANE distinctly superior to previous steroids, effective in radically reduced dosage, and with minimal disturbance of electrolyte and fluid metabolism.

The ataractic effect is a central neuro-relaxing action — the result of a marked cerebral specificity — free of mental fogging and devoid of any major complications: no liver, blood or brain damage. This peace-of-mind component is also used in the lowest dosage range.

Supplied: Each green, scored, ATARAXOID oral tablet contains 5 mg. prednisolone (STERANE) and 10 mg. hydroxyzine hydrochloride (ATARAX). Bottles of 30 and 100.

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the first
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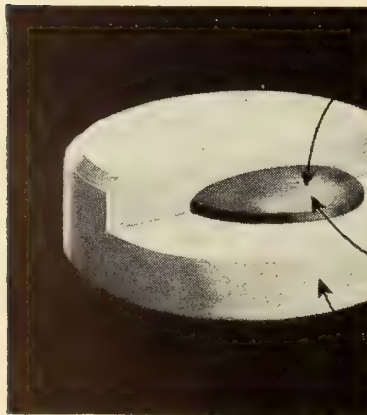
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For Pain-Free of every In "Rheumatism"

MULTIPLE TEMP

combine:

THE PROPER FORMULA
PROPERLY FORMULATED



PREDNISOLONE (1)

+

ASPIRIN (0.3 Gm.)

+

ASCORBIC ACID (5)

+

ANTACID (0.2 Gm.)

Physical separation of the steroid component from the aluminum hydroxide as provided by the Multiple Compressed Tablet construction assures full potency and stability of prednisolone.

*Early rheumatoid arthritis
Rheumatoid spondylitis
Osteoarthritis
Still's disease
Psoriatic arthritis
Bursitis

Synovitis
Tenosynovitis
Myositis
Fibrositis
Neuritis

performance

activities

patients

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.... for anti-inflammatory, anti-rheumatic benefits
at effective low dosage.

.... for analgesia plus additional anti-rheumatic
activity.

.... for anti-stress support that guards against ad-
renal ascorbic acid depletion.

(Ascorbic Acid present as 60 mg. Sodium Ascorbate.)

.... dried aluminum hydroxide gel minimizes the
possibility of gastric distress.

DOSAGE: 1-4 TEMPOGEN Tablets *t.i.d.* or *q.i.d.*
(TEMPOGEN Forte, 1 or 2 tablets *t.i.d.* or *q.i.d.*)
for one or two weeks. Then lower by 1 tablet every four
or five days to maintenance level.

SUPPLIED: TEMPOGEN and TEMPOGEN Forte
—in bottles of 100 Multiple Compressed Tablets.
(TEMPOGEN Forte provides 2 mg. of prednisolone.)



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**UNIFORM CHEMICAL LABELING
LAW PROPOSED**

THE AMERICAN Medical Association's Board of Trustees has authorized a first step toward protecting the public from potentially dangerous household and commercial chemicals.

The board authorized the A.M.A. committee on toxicology to draft a recommended "model" law on labeling of many possibly harmful chemicals not now regulated.

It would serve as a guide for writing regulations which would require labels to show such information as the product's contents, its possible dangers, directions for safe use, and first aid instructions.

Products involved include auto care and repair materials, paints and paint removers, putty, soldering fluids, household cleansers and polishers, heating and cooking fuels, laundering items, art supplies, and toys containing chemicals.

The committee's secretary, Bernard E. Conley, estimates there are at least a quarter of a million different trade-name substances now on the market. Without proper labeling, physicians and the public cannot possibly know what harmful material they may contain or how to treat poisoning from them.

The law should be an "enabling act" under which later regulations could spell out necessary details for enforcement and compliance, according to Dr. Torald Sollmann, Cleveland, committee chairman. The legislation should be flexible and not readily out of date.


CIRRHOSIS

A NEW concept is emerging concerning the role of high protein diets in the treatment of liver disease. While a high protein intake is still part of the recognized therapy for many liver derangements, it has been found that in certain patients with advanced cirrhosis (scarring) of the liver that protein may actually be toxic. It is felt that one cause of the destructive effects observed is the ammonium released in the digestive tract when protein is broken down. While patients with normal or slightly malfunctioning livers can convert ammonium into harmless products, patients with severe liver disease often have increased blood ammonium concentrations which may lead to hepatic coma.

Antos

NEWS NOTICE

THE FORD Foundation has granted \$22,000,000 to aid private Medical Schools. Forty-three four-year schools will receive \$500,000 each while the two-year Medical School at Dartmouth College will receive \$250,000. These grants form a part of \$90,000,000 to be distributed by the Foundation to aid the various private Medical Schools of the country.



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Woman's AUXILIARY

GILA COUNTY MEDICAL SOCIETY

CAN YOU remember when it was an elaborate evening to attend the County Medical Society's meetings? The doctors got out their tuxedos and the ladies wore evening gowns and the dinners served were just as nice as possible. The monthly meetings of the Gila County Medical Society are no longer quite that elaborate but because of its size the monthly county medical society meetings are done a little differently than in the larger societies in Arizona.

The Gila County Medical Society meets the third Thursday of each month, except during the summer, for a dinner meeting which is usually held at the Country Club. The wives, nine times out of ten, are members taking their turns as hostess. After the social portion of the evening the women adjourned to a separate room where they hold their Auxiliary meeting, after which, time permitting, bridge or some other game takes over.

The doctors hold their business meetings, which are generally short, and then they have a program. The speaker often is one of the specialists in medicine or surgery from Phoenix. If the program is of interest to the women, they are invited to that portion of the meeting.

Doctor and Mrs. Hazel drive to Globe from Hayden, 60 miles of mountain driving, to attend the meetings.

The membership of the Woman's Auxiliary to the Gila County Medical Society fluctuates but there are always about 11 or 13 active members. When the new Gila General Hospital was built in Globe six years ago, the Auxiliary had two benefit card parties and raised sufficient funds to furnish one of the private rooms in the hospital.

In the past three years we have worked diligently on the Nurse Recruitment Program and have sponsored weekly thirty minute radio programs on various health problems, the material for these broadcasts being obtained from the American Medical Association.

The Auxiliary members for two years assisted the local chapter of the Arizona Society for

Crippled Children in conducting audiometer tests on the children in the schools in the Globe-Miami district.

Last year the Gila County Auxiliary members did an outstanding job with subscriptions of *Today's Health*. We secured 185% of our quota — every member purchased a personal subscription plus an extra one. The extra subscriptions were donated to the two public libraries, dentist's waiting rooms, beauty parlors, and the libraries of the high schools.

As you know the 1956-57 national theme of the Woman's Auxiliary to the American Medical Association is **HEALTH IS OUR GREATEST HERITAGE**. In this connection and in cooperation with the Committee on Mental Health, our project this year is to mail to every high school senior in Gila County (Globe, Miami, Payson, Hayden, Young) the series of nine letters entitled, *Milestones to Marriage*. Wherever we have discussed this project, it has been accepted with great enthusiasm. We have even been asked for several extra sets of the letters so that the high school teachers can use them to initiate discussion groups in the Social Science classes. The Auxiliary intends to offer the services of our doctors or their wives for private or group discussions on any phase of these letters. We are very anxious to get this project under way and believe it will stand out among our more worthwhile projects.

All in all, even though the Women's Auxiliary to the Gila County Medical Society is a very small group, we are trying to uphold the objectives of the Women's Auxiliary to the American Medical Association by —

Assisting the American Medical Association in its program for the advancement of medicine and public health, and

To cultivate friendly relations and promote mutual understanding among the physicians' families.

Mrs. William E. Bishop, President
Woman's Auxiliary to the
Gila County Medical Society

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